

ENGINEERING & RESEARCH CENTRES · EDITION 3.0

The Engineering Centres

Bursa (Türkiye), Montegranaro and Brindisi (Italy) and New Cairo (Egypt): the four generalist engineering centres of the Group: certified technology, original research, plant engineering and operational assurance, together with the institutional accreditations obtained in the Arab Republic of Egypt during 2026.



R. ROCKEFELLER S.C. ENGINEERING & RESEARCH CENTERS · CENTERS OF EXCELLENCE

TÜRKİYE · EGYPT · ITALY · ORIGINAL DOCUMENTATION

GEOHERMIC AGS TECHNOLOGY Advanced Geothermal Systems: accessible, efficient, sustainable energy for the future.	GREEN ENERGY ENGINEERING Renewable energy solutions, sustainable power systems, clean energy transition.	INDUSTRIAL ENERGY ENGINEERING Industrial plants and infrastructure, energy efficiency, engineering excellence.
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4 ENGINEERING CENTRES	169 ENGINEERS AND SPECIALISTS	10 ISO MANAGEMENT SYSTEMS	40+ COUNTRIES DELIVERED
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00 · THE ORGANISATION THIS DOSSIER IS ABOUT

The Rob Rockefeller Standard Carbon LLC

A Delaware registered global technology, energy and sustainability group, operating through four generalist engineering centres on three continents.

THE GROUP IN ONE PARAGRAPH

The Rob Rockefeller Standard Carbon LLC (RRSC) is a technology and energy group registered in the State of Delaware, United States, operating across the Americas, Europe, the Middle East, Africa and Asia. It carries advanced engineering, energy and sustainability capability into industrial, institutional and sovereign markets. Its technical substance does not sit in a slide deck: it sits in four operating engineering centres, each run in structured technical partnership with an established engineering house, and each open to inspection.

This dossier profiles those four centres in full: the facilities, the people, the disciplines, the technology, the delivered project record and the certifications that stand behind each of them. It closes with the institutional accreditations obtained in the Arab Republic of Egypt during 2026 and with the consolidated group reading.

THE FOUR-CENTRE STRUCTURE

Each centre is a complete engineering environment, not a representative office. Each holds its own certifications, its own delivered record and its own named leadership. Together they cover original research, technology development, plant engineering and operational assurance: the full industrial cycle.

THE FOUR CENTRES, IN ONE LINE EACH

- **Bursa, Türkiye:** a 4,000 m² factory and R&D centre with RePG Energy: the low-temperature ORC machine is designed, built, certified and tested here.
- **Montegranaro, Italy:** a 1,400 m² strategic-independent research and development centre with Think Green Technologies S.A.: green energy, AI and sustainability, technological research.
- **Brindisi, Italy:** a 3,000 m² headquarters with a 1,600 m² technology research laboratory with Skem@ Srl: basic design, FEED and detail engineering for global licensors.
- **New Cairo, Egypt:** a 500+ m² two-branch hub with Yellow Helmet Egypt: HSSEQ, audit, workforce certification, decarbonisation.

THE IDENTITY

The Group trades under the R.Rockefeller S.C. mark and the AURYNTHEON emblem. The corporate particulars, the registered addresses and the international presence are set out below and repeated on the closing page of this dossier.

NEW IN THIS EDITION

This third edition integrates the Montegranaro research centre, established at Montegranaro (FM) in the Marche with Think Green Technologies S.A., into the master profile alongside Bursa, Brindisi and New Cairo, and updates every consolidated figure to the four-centre reading.

CORPORATE PARTICULARS

Legal name	The Rob Rockefeller Standard Carbon LLC
Jurisdiction	State of Delaware, United States
Delaware LLC Reg. No.	6714331
EIN	93-4657669
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Digital	www.therockefeller-sct.com · team@rockefeller-sct.com

INTERNATIONAL PRESENCE

USA · Italy · Bulgaria · Türkiye · UAE · Saudi Arabia · Tunisia · Congo · Egypt · Libya · Ivory Coast · Nigeria · South Africa · India · China · Singapore · Nepal · Hong Kong

24

ACTIVE CENTRES

5

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ENGINEERING CENTRES

REPORT STRUCTURE

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From the Group and its operating doctrine, through the four centres one by one, to the 2026 institutional accreditations and the consolidated group reading.

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A NOTE ON SOURCING

This dossier states recorded facts about four operating facilities. Company, technical and project data are drawn from the engineering documentation of RePG Energy, Think Green Technologies S.A., Skem@ Srl and Yellow Helmet Egypt and from RRSC institutional material. Certification facts are drawn directly from the certificates and test reports themselves: the INTERTURK Attestation of Compliance, the IQR ISO certificates and the four supporting test reports for Bursa; the ISO 9001 and ISO 14001 systems under ILC Certification for the Montegranaro partnership; the ISO 9001 and ISO 45001 systems for Brindisi; and the ISO, professional-accreditation and Egyptian-authority registrations for New Cairo. The 2026 Egyptian accreditations in Part Six are reported from the registration card and the official communications themselves.

ON PHOTOGRAPHS

Every photograph reproduced in this dossier is an original photograph of the facility, the equipment, the team or the document it describes. Where a page carries a designed information graphic rather than a photograph, the caption says so. No image is repeated: each photograph appears exactly once in this document.

A READER'S ROUTE THROUGH THE DOCUMENT

- **If you have ten minutes:** read the Editorial, the Group at a glance, and the four one-page centre summaries that open Parts Two to Five. That is the whole argument in outline.
- **If you are technical:** go to the ORC platform and measured-performance pages in Part Two, the testing infrastructure and HG4HOME pages in Part Three, and the project references in Part Four.
- **If you are institutional:** go to the certification pages in each part, and to Part Six, which sets out the Egyptian accreditations obtained in 2026 in full.

01 · EDITORIAL

Four addresses, one engineering group

The argument of this document is not a claim about capability. It is four addresses that can be visited, and four sets of certificates that can be held in hand.

Most engineering and energy groups of this reach are assembled from representative offices. A representative office can quote, negotiate and coordinate, but it cannot machine a turbine, run a research bench, stamp a single-line diagram or certify a crew. The Rob Rockefeller Standard Carbon LLC is built the other way round: the commercial structure sits on top of four operating engineering centres, each with a floor, a payroll, an audited management system and a delivered record.

Bursa is the technology engine. A 4,000 m² hub in the Nilüfer industrial corridor where a proprietary low-temperature Organic Rankine Cycle machine is designed, machined, assembled, instrumented and run on a test bench before it ships. It is where the intellectual property is created and where the 1 MW Advanced Geothermal Systems pilot is being built.

Montegranaro is the research engine. A 1,400 m² laboratory-grade industrial site in the province of Fermo where a technology is carried from first principle to a working, fully instrumented prototype: fourteen resident engineers, modular test rigs, and a documentary discipline strong enough to withstand independent verification.

Brindisi is the plant-engineering house. A 3,000 m² headquarters on the Adriatic with a 1,600 m² technology research laboratory, whose engineering nucleus descends from the former Himont / Montell polyolefin engineering division. It has delivered basic and detail engineering for the world's leading licensors and operators in more than forty countries.

New Cairo is the assurance and transition hub. A two-branch operation of more than 500 m² in the 1st Settlement, where industrial safety systems are designed, audits are run, workforces are certified and decarbonisation mandates are delivered for the Egyptian and wider MENA industrial base.

Each centre answers a different question. Bursa answers *can the technology be built and certified?* Montegranaro answers *can it be established and measured?* Brindisi answers *can a plant be engineered around it?* New Cairo answers *can it be operated safely, audited and decarbonised?* A group that can answer all four from its own floors is a different proposition from one that subcontracts three of them.

WHAT THIS DOSSIER DOES NOT DO

It does not forecast. Every figure printed here is a recorded fact drawn from an engineering document, a certificate, a delivered project or a registration. Where a date lies in the future, a roadmap target or a pilot milestone, it is marked as a target and nothing more.

THE 2026 ADDITIONS

This edition records two things that did not exist when the master profile was first written: the integration of the Montegranaro research centre into the Group's generalist network, and the formal accreditation of the Cairo engineering centre within the system of companies cooperating with the activities of the National Organization for Military Production, together with the university partnership and the diplomatic-commercial support that accompanied it.

WHAT EACH CENTRE ANSWERS FOR

- **Bursa** owns the technology and the patents, and certifies the machine.
- **Montegranaro** owns original research, prototyping and instrumented demonstration.
- **Brindisi** owns the plant engineering, from feasibility to as-built.
- **New Cairo** owns operational assurance, training and decarbonisation.

“ A representative office can promise. A working floor, an audited system and a certificate in hand can only be verified, or found wanting.

CAN IT BE BUILT?

Answered in Bursa, on a factory floor, by a machine that carries a CE attestation and by two units that have been generating electricity continuously for more than a year.

CAN IT BE ESTABLISHED?

Answered in Montegranaro, on laboratory benches, by an instrumented demonstrator producing measured results under recorded conditions, and by a documentary discipline that lets a third party reproduce every figure.

CAN A PLANT BE ENGINEERED ROUND IT?

Answered in Brindisi, by fifteen years of basic design, front-end engineering and detail engineering delivered to the world's leading licensors in more than forty countries.

CAN IT BE RUN SAFELY AND DECARBONISED?

Answered in New Cairo, by 15,000 professionals trained under a national energy-authority approval and by an audited, institutionally recognised assurance practice covering HSSEQ, AI monitoring and carbon management.

ONE GOVERNING PRINCIPLE

Every centre retains its own engineering capability and its own credentials. RRSC is the commercial and institutional vehicle. Nothing critical is outsourced, and no partner surrenders ownership of what it has built.

02 · THE GROUP AT A GLANCE

Four centres, consolidated

What the four engineering centres add up to when they are read as one organisation.

~10,765M² ENGINEERING FLOOR**169**

ENGINEERS & CONSULTANTS

180+

GLOBAL PATENTS

40+

COUNTRIES DELIVERED

10

ISO SYSTEMS HELD

	BURSA · TÜRKIYE	MONTEGRANARO · ITALY	BRINDISI · ITALY	NEW CAIRO · EGYPT
Operating partner	RePG Energy	Think Green Technologies S.A.	Skem@ Srl	Yellow Helmet Egypt
Role in the Group	Technology & IP engine	Research & development centre	Plant engineering house	Assurance & transition hub
Premises	4,000 m ² main hub	1,400 m ² laboratory-grade site	3,000 m ² HQ + 1,600 m ² lab + 265 m ² office	500+ m ² across two branches
People	85 engineers, 8 disciplines	14 resident engineers	25+ specialists, 6 disciplines	30+ consultants + 15 engineers
Core discipline	Low-temperature ORC & AGS geothermal	Green energy, AI & sustainability, technological research	Electrical, instrumentation & automation; polyolefins	HSSEQ, decarbonisation, AI monitoring
Management systems	ISO 9001 · ISO 14001	ISO 9001 · ISO 14001 (partner, ILC)	ISO 9001 · ISO 45001	ISO 9001 · 14001 · 45001 · 27001
Product / service proof	CE-certified RE-75kW, TRL 9 fleet	HG4HOME instrumented demonstrator	15+ years of delivered engineering	15,000+ trained · 900+ services
Flagship programme	1 MW AGS pilot in build	TEAS process families & HG4HOME	Engie 5 MW green hydrogen	MENA decarbonisation & AGS mandates

03 · THE OPERATING DOCTRINE

Research, technology, plant, assurance

Four centres, four questions, one industrial cycle, and the reason the structure is built this way rather than as a network of sales offices.

CENTRE ONE · BURSA

The technology engine. Where the intellectual property is created and where machines are built. A design-build-test site: thermodynamic and mechanical design, machining and fabrication, electrical and control-cabinet build, refrigerant-circuit assembly, instrumentation, and a bench where every unit runs before dispatch.

Question answered: can the technology be built, certified and made to run continuously in the field?

CENTRE TWO · MONTEGRANARO

The research engine. Where technology is established. A strategic-independent R&D centre: its own laboratory assets, its own instrumentation, its own permanent staff and its own research agenda. Rigs are built, instrumented and run under recorded conditions; machine-learning models are trained on the centre's own measurement archive; results are documented to a standard that allows independent reproduction.

Question answered: can the technology be established, measured and handed on?

CENTRE THREE · BRINDISI

The plant-engineering house. Where a process becomes an installation. Multi-discipline engineering: process, mechanical, piping and layout, civil, structural and HVAC, electrical and instrumentation and control, with a research laboratory where control and safety cabinets are assembled and functionally tested.

Question answered: can a full industrial plant be engineered, procured and commissioned around it?

CENTRE FOUR · NEW CAIRO

The assurance and transition hub. Where operation is made safe and measurable. Gap analysis and international audits, Control of Work, behaviour-based safety, integrated ISO frameworks, AI monitoring and digital twins, carbon assessment and energy-transition advisory.

Question answered: can it be operated to a zero-incident standard, audited, and decarbonised?

THE COMBINED PROPOSITION

Read separately, each centre is a competent regional operator. Read together, they close a loop that very few groups of this size can close: an independent research laboratory able to establish and instrument a technology; a proprietary, patented energy-conversion platform developed and manufactured in-house; a plant-engineering house able to design the industrial installation that technology sits inside; and an assurance and training platform able to certify the workforce that operates it and to measure the carbon it saves.

That loop is the reason the Group can take institutional and sovereign engagements rather than sub-packages. It can present an instrumented research programme, a technology with a CE certificate and a live operating fleet, an engineering organisation with fifteen years of delivered basic and detail design for the world's largest licensors, and a delivery platform approved by a national energy authority for the training of its industrial workforce.

WHERE THE CENTRES SIT

Bursa	Alaaddinbey Mah., Nilüfer / Çalı, Bursa, Türkiye
Montegranaro	Via Massimo d'Antona snc, 63812 Montegranaro (FM), Italy
Brindisi	Industrial zone, Brindisi, Puglia, Italy
New Cairo	Building 2, Group 10009, 10th Neighborhood, 1st Settlement, New Cairo, Egypt

THE BRIDGE BETWEEN THEM

The Advanced Geothermal Systems programme is where the centres converge: the turbine is built in Bursa, the surface plant is engineered in Brindisi, the operating and decarbonisation mandate for the MENA region is carried by New Cairo, and Montegranaro is the network's point of entry for technologies arriving from outside: where a partner brings a process to the Group, Montegranaro is where it is built, instrumented and assessed before it is committed to a project.

04 · METHOD

What every figure in this dossier rests on

A short account of where the numbers come from, how they were checked, and what a reader is entitled to ask for.

Industrial energy projects fail at the joints. A research house hands over to a technology supplier, who hands over to an engineering contractor, who hands over to an operator, who hands over to a safety consultancy, and the accountability dissolves at every handover. The four-centre structure removes three of those joints from inside the Group’s own perimeter.

It also means that a partner or a public authority evaluating the Group is not asked to believe a capability statement. They are invited to four addresses. In Montegranaro they can watch a demonstrator run and read the acquisition file behind every published figure. In Bursa they can watch a machine being assembled and read the live telemetry from units already running in the field. In Brindisi they can inspect the engineering offices and the test lab and walk a fifteen-year project record. In New Cairo they can sit in a training room, review the audit files, and read a registration issued by a national authority.

THREE CLASSES OF STATEMENT

Recorded fact. A figure taken from a certificate, a registration, an engineering document or a delivered contract. Floor areas, headcounts, certificate numbers, validity dates, client names and project dates are all of this class.

Measured result. A figure produced by instrumentation: the ORC bench test table, the field telemetry from the Hayat Kimya and AFJET units, the HG4HOME demonstrator readings. These are reported with the conditions under which they were measured.

Stated target. A milestone that has not yet happened. Every roadmap entry beyond the current year is marked as a target and is never presented as achieved.

WHAT CAN BE ASKED FOR

Each centre keeps the underlying documentation and makes it available for review under a non-disclosure agreement: the certificates and test reports, the intellectual-property schedules, the project reference books, the credentials portfolio and the registration documents. The live operating dashboards from the deployed ORC units are accessible without authentication.

THE INDUSTRIAL CYCLE, CENTRE BY CENTRE

PHASE	CENTRE	WHAT IS PRODUCED
Original research	Montegranaro	Characterised properties, running prototypes, reproducible demonstrators
Applied research	Bursa	Thermodynamic cycle, working-fluid science, patents
Product	Bursa	Certified ORC machine, containerised module
Concept / FEED	Brindisi	Feasibility, scope, basic and front-end design
Detail design	Brindisi	P&IDs, single-lines, 3D model, isometrics
Build support	Brindisi	Control and safety cabinets, functional test
Mobilisation	New Cairo	Control of Work, permit systems, crew certification
Operation	New Cairo	Audit, behaviour-based safety, AI monitoring
Transition	New Cairo	Carbon assessment, ESG reporting, abatement

PRIMARY SOURCES BY CENTRE

CENTRE	PRIMARY DOCUMENTATION RELIED ON
Bursa	INTERTURK Attestation of Compliance INT-26-124RES-01 and its four test reports; IQR ISO 9001 and ISO 14001 certificates; RePG engineering documentation and bench-test tables; field SCADA records
Montegranaro	The centre’s institutional presentation (August 2026); Think Green Technologies S.A. company profile and published technology portfolio; ISO 9001 and ISO 14001 systems under ILC Certification; HG4HOME demonstrator records
Brindisi	Skem@ Srl company profile (2023) and the three engineering-reference volumes for Oil & Gas, Petrochemical and Power (2023); ISO 9001 and ISO 45001 systems
New Cairo	RRSC-Yellow Helmet Egypt Strategic Partnership Agreement (Ref. RRSC-YHE-EGY-2026-001); the credentials portfolio; Egyptian commercial and authority registrations
Egypt 2026	The 2026 registration card issued by the Security Sector of the National Organization for Military Production; the university partnership announcement; the commercial recommendation issued through the Egyptian Embassy in Washington D.C.

PART TWO · CENTRE ONE

Bursa, Türkiye

The technology engine of the Group

A 4,000 m² engineering and R&D centre in Nilüfer, Bursa, operated in technical collaboration with RePG Energy: where the low-temperature Organic Rankine Cycle machine is designed, machined, assembled, instrumented and run on a test bench before it ships, and where the 1 MW Advanced Geothermal Systems pilot is in build.

ENGINEERING CENTER – BURSA, TURKEY

Main Engineering Hub — Technology & Energy | 4000 m²





The Rob Rockefeller S.C.
RePG

TEAM:
85+ Senior Engineers & Technicians

SPECIALIZATION:
Energy Technology & Industrial Systems

STRATEGIC HUB:
European & Middle Eastern Operations

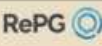
KEY FOCUS:
RePG & SIA Technology Development

CAPACITY:
Full-scale Prototyping & Manufacturing

GEOTHERMAL AGS & ENERGY TECHNOLOGY:
Advanced Geothermal Systems & Sustainable Energy Solutions

INTELLECTUAL PROPERTY:
180+ Global Patents

CERTIFICATIONS:
ISO 9001, ISO 14001


THE RRSC & REPG ENGINEERING CENTER, NILÜFER, BURSA

THE CENTRE DATA PLATE · ORIGINAL DOCUMENTATION

IN THIS PART

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4,000 m²

MAIN ENGINEERING HUB

85

ENGINEERS · 8 DISCIPLINES

180+

GLOBAL PATENTS

TRL 9

COMMERCIAL ORC FLEET

05 · THE CENTRE AT A GLANCE

The factory floor is the whole argument

Everything claimed about the technology can be walked through, touched and measured at one address in Nilüfer, Bursa.

The main engineering hub for the Group's European and Middle Eastern operations: a 4,000 m² facility with 85 senior engineers and technicians, full-scale prototyping and manufacturing, 180+ global patents, and ISO 9001 / ISO 14001 / CE certification. Everything that follows in this part can be verified there.

One facility, the full cycle. Inside the hub an 85-strong engineering team carries a unit from CAD to commissioning. The same floor produced the two machines now running continuously in the field, and now hosts the 1 MW Advanced Geothermal Systems pilot.

Certified, not just claimed. The platform's RE-75kW configuration carries a CE Attestation of Compliance from INTERTURK against the Machinery, Low-Voltage and EMC Directives, backed by four named test reports, and the company operates under ISO 9001 and ISO 14001 management systems. Each certificate is reproduced later in this part.

Instrumented from day one. Every field unit streams live telemetry to a cloud SCADA layer, so the engineering on the bench is continuously validated against real operating data from deployed machines.

Why this is the decisive section. Investors and partners can do three things in one visit: inspect the machines on the bench, read the live SCADA telemetry from the field units, and hold the certificates in hand. Capability is asserted once; a working factory is believed.

WHAT BURSA ACTUALLY IS

A wholly-operating engineering centre in Nilüfer, Bursa: a 4,000 m² main hub, an 85-engineer team, in-house design-build-test, and a live ORC fleet, running under ISO 9001 and ISO 14001 and shipping a CE / INTERTURK-certified RE-75kW platform. The 1 MW AGS pilot is in build here now.

WHAT THE FLOOR SHIPS

Three visible product families on a single hardware platform: industrial waste-heat ORC units, low-temperature geothermal ORC units, and RePG AQUA atmospheric-water generators, all built around the same modular turbine architecture.

THE COLLABORATION

The centre operates under the technical collaboration between RePG Energy, the technology developer and IP owner, and The Rob Rockefeller Standard Carbon LLC, which holds the exclusive global deployment rights.

4,000	85	99.2m	TRL 9
M ² MAIN HUB	ENGINEERS	TL FUNDING SINCE 2017	ORC FLEET

“ *Capability is asserted once. A working factory with a live fleet and certificates in hand is believed permanently.* ”

06 · THE COMPANY BEHIND THE CENTRE

RePG Energy: the technology house in Bursa

A patented, venture-backed renewable-energy engineering company, and the collaboration that carries it to the world.

RePG Energy (RePG Enerji Sistemleri San. ve Tic. A.Ş.) was founded in 2016 by Hasan Ayartürk with the support of the TÜBİTAK BİGG programme, after incubation at İTÜ Çekirdek in 2015. The same year it took angel investment from TRANGELS, and in 2017 produced its first prototype. The name stands for Real Power Generator: continuous, uninterrupted electricity from renewable and waste-heat sources.

RePG develops its systems on its own licences and patents: 180+ global patents and assets with 10 applications pending, 22 trademark registrations and 5 design registrations, with a portfolio of completed and ongoing publicly-funded projects. Since 2017 the company reports a cumulative 99.2 million TL in funding from angel investors, strategic and financial investors, funds and deep-tech venture capital, sustaining uninterrupted R&D and product development.

Three locations, one factory. RePG operates across three sites: its İTÜ ARİ Teknokent headquarters in Istanbul, the ULUTEK Teknokent R&D offices, and, the subject of this part, the Factory & R&D Centre in Nilüfer, Bursa.



AT A GLANCE

Established	2016 · Hasan Ayartürk · TÜBİTAK BİGG
Incubation	İTÜ Çekirdek, 2015
First prototype	2017
Field	Renewable energy systems
Funding to date	99.2 million TL since 2017
IP portfolio	180+ global patents · 22 trademarks
Team	85 engineers
Sites	İTÜ ARİ (HQ) · ULUTEK · Bursa factory

THE OWNERSHIP AND THE COLLABORATION

RePG Energy is the technology developer and sole IP owner of the low-temperature ORC platform. The Rob Rockefeller Standard Carbon LLC holds exclusive global deployment and commercialisation rights through a strategic partnership. RePG retains manufacturing and engineering capability; RRSC is the commercial vehicle for international deployments and sovereign partnerships.

THE FUNDING AND OWNERSHIP HISTORY

YEAR	EVENT	SIGNIFICANCE
2015	Incubation at İTÜ Çekirdek	The concept enters Türkiye's principal technology incubator, attached to Istanbul Technical University
2016	Company founded with TÜBİTAK BİGG support	A public founding grant: the technology is assessed and backed by the national research council
2016	Angel investment from TRANGELS	The first private capital into the platform
2017	First prototype produced	The move from concept to a physical machine that could be measured
2017 on	Cumulative 99.2 million TL raised	Angels, strategic and financial investors, funds and deep-tech venture capital
Present	Three operating sites	İTÜ ARİ Teknokent HQ, ULUTEK Teknokent R&D offices, and the Bursa factory

THE FUNDED PIPELINE BEHIND THE COMPANY

PROGRAMME	BODY	SCOPE
BİGG	TÜBİTAK	Founding grant, 2016: first-stage development of the ORC concept
1071 / 1511	TÜBİTAK	Applied R&D on power electronics, control and industrial ORC integration
1509	TÜBİTAK · Eureka	Türkiye-Singapore network: electricity from waste heat with an innovative refrigerant mixture
SME Phase-1	H2020	European feasibility and market-readiness assessment
KOSGEB	National	Small-scale residential and boiler-circuit prototype
Teknokent projects	ULUTEK · İTÜ ARİ	Heat exchangers, high-pressure pumps, control systems
Horizon Europe	European Union	Next-generation flexible trigeneration geothermal ORC plant

07 · THE FACILITY

The Bursa Engineering & R&D Centre, in detail

A 4,000 m² main engineering hub and test floor in Nilüfer: the physical heart of the technology.

Bursa is one of Türkiye's principal industrial centres, and the Nilüfer / Çalı district where the facility sits is a dense manufacturing and technology corridor. The centre occupies a 4,000 m² main engineering hub housing the factory, the R&D hall, assembly and staging areas, and the test floor for containerised-unit handling.

Designed as a design-build-test site. Unlike a pure office or a contract assembler, the centre integrates the full engineering cycle under one roof: mechanical and process design, machining and fabrication, electrical and control-cabinet build, refrigerant-circuit assembly, instrumentation, and a test bench where each unit is run before dispatch.

Where it is. Address: Alaaddinbey Mah., Nilüfer / Çalı, Bursa, Türkiye. The registered company address on the certificates is Alaaddinbey Mah. 614. Sok., Ünlü Plaza 2 No:12A/C, 16285 Nilüfer / Bursa, with engineering activity also recorded at Atilla Tatveren Cad. No:8 in the same district.

The speed advantage. Because the turbine architecture, the control software and the modular integration method are all RePG's own intellectual property, the engineering team can iterate the design, build the change, and validate it on the bench without external dependencies. That is the mechanism behind an 8-14 week order-to-commissioning cycle.

THE FLOOR, FUNCTION BY FUNCTION

AREA	FUNCTION
Factory hall	Machining, fabrication, skid and module build
R&D hall	Prototype development and component trials
Assembly	Turbine, heat exchanger and piping integration
Electrical	Power-electronics and control-cabinet build
Test bench	Full-load run of every unit before dispatch
Staging	Containerised-unit handling and dispatch

THE FIVE-STAGE INTERNAL FLOW

- **Design:** thermodynamic and mechanical CAD
- **Fabricate:** machining, heat-exchanger and skid build
- **Integrate:** cabinets, refrigerant charging, instrumentation
- **Test:** each unit run on the bench across its temperature band
- **Commission:** containerised dispatch and field connection in 8-14 weeks



HOT AND COLD CIRCUIT PIPING AND VALVE MANIFOLD ON THE REPG TEST BENCH, BURSA

THE HARDWARE THAT CONDITIONS EACH UNIT BEFORE DISPATCH · ORIGINAL PHOTOGRAPH

07 · THE FLOOR AND THE TEAM

An 85-engineer, multi-disciplinary force

The capability that lets one site take an ORC unit from first principles to a commissioned, certified machine.

The centre's defining asset is its people: a team of 85 engineers spanning R&D, electrical, electronic, software, mechanical, chemical, automotive, biosystems and industrial engineering. This breadth is what allows a single facility to own the complete value chain rather than outsourcing critical steps.

Disciplines under one roof. Mechanical and process engineers design the thermodynamic cycle and the skid; electrical and power-electronics engineers build the generator and grid-interface cabinets; software and control engineers write the control logic and the SCADA integration; chemical engineers handle the working-fluid selection and circuits.

Audited, not asserted. The proof of the engineering discipline is external and audited: the centre operates under ISO 9001:2015 (Quality) and ISO 14001:2015 (Environment) management systems for engineering and consultancy in energy projects, and its products carry an audited CE certificate.

Why breadth matters more than headcount. Eighty-five engineers is not a large organisation by industry standards. What makes it sufficient is that the eight disciplines present cover every step the machine passes through. A firm with two hundred mechanical engineers and no power-electronics capability still has to buy its grid interface from a third party, and with it inherits that party's lead time, its revision cycle and its failure modes. Eight to fourteen weeks from order to commercial operation is achievable where the engineer who specified a change can walk to the bench and see the result the same week.

EIGHT ENGINEERING DISCIPLINES UNDER ONE ROOF

DISCIPLINE	SCOPE ON THE FLOOR
R&D / process	Thermodynamic cycle, working-fluid science, recuperation
Mechanical	Turbine, skid, heat exchangers, containerised module design
Electrical	Asynchronous generator, cabinets, grid synchronisation
Electronic / power	Power electronics, inverters, protection systems
Software / control	Control logic, automation, cloud SCADA telemetry
Chemical	Working-fluid selection, sealed-circuit charging
Automotive	Compact packaging, vibration, thermal management
Biosystems / industrial	AQUA atmospheric-water line, process integration

INSTRUMENTED FROM DAY ONE

Every field unit streams live telemetry to a cloud SCADA layer at one-minute intervals, so the engineering on the bench is continuously validated against real operating data from deployed machines: a closed feedback loop between factory and field.



REPG LEADERSHIP: AN ENGINEER-LED BOARD

AYARTÜRK · KARAYAĞIZ · İŞERİ · KILIÇ · VATANSEVER · KOLAY · ORIGINAL PHOTOGRAPH

08 · THE PEOPLE AND THE DISCIPLINES

Who runs the centre

A founder-led, engineer-built organisation: the leadership are practising engineers, not financial managers.

The distinguishing feature of the Bursa leadership is that it is composed of practising engineers who remain technically responsible for what the floor produces. The founder is a mechanical engineer who designed the first prototype; the chairman is a computer engineer; the R&D and intellectual-property function is held by a biosystems engineer; project delivery is run by a mechanical engineer.

That structure has a practical consequence. Technical decisions, a change of working fluid, a revision to the turbine geometry, a new control strategy, are taken by people who can evaluate them directly and who carry the consequences on the test bench, rather than being escalated through a non-technical layer.

THE ENGINEERING FORCE BEHIND THE AGS PROGRAMME

The Advanced Geothermal Systems programme is where the engineering centres of the Group work on a single deliverable, governed as one technical organisation. Hüseyin Karayağız, CEO of RePG and Chairman of the Board, holds the general management of the Bursa engineering centre within the Group structure; Hasan Ayartürk, founder and chief engineer, carries the technical responsibility for the machine itself.

LEADERSHIP OF RECORD

NAME	OFFICE · DISCIPLINE
Hasan Ayartürk	Founder & General Manager · Mechanical Engineer
Hüseyin Karayağız	Chairman of the Board · Computer Engineer
Hakan İşeri	Firm Director · Automotive Engineer
Sena Kılıç	R&D / IP Manager · Biosystems Engineer
Cihan Vatansever	Project Manager · Mechanical Engineer
Ezgi Kolay	Administrative Manager · Economics

THE AGS PROGRAMME ACROSS THE FOUR CENTRES

PHASE OF THE AGS PROGRAMME	CENTRE RESPONSIBLE	WHAT IT PRODUCES
Technology-entry research and assessment	Montegrano	Instrumented build and assessment of processes entering the Group's portfolio
Thermodynamic design and working fluid	Bursa	Cycle definition, fluid selection, recuperation strategy
Turbine and module manufacture	Bursa	The machine itself, bench-tested before dispatch
Certification	Bursa	CE conformity file and the supporting test reports
Surface plant and well interface	Brindisi	Process, piping, civil and electrical design
Control and safety systems	Brindisi	Cabinets engineered, assembled and functionally tested
Permit-to-work and site mobilisation	New Cairo	Control-of-Work systems and contractor-safety culture
Crew certification	New Cairo	EGPC / EGAS-approved technical and safety training
Monitoring and carbon accounting	New Cairo	AI dashboards, KPI tracking, ESG reporting

“ One turbine architecture, engineered across four centres under a single technical governance: that is what makes an AGS programme deliverable rather than aspirational.

08 · THE OPERATIONAL FORGE

From CAD to commissioning, in-house

The centre’s speed advantage comes from owning every step, and its defence comes from owning the patents underneath them.

The intellectual-property moat. The engineering is protected by a deep portfolio developed and held by RePG. The Group reports a global portfolio exceeding 180 patents and patent assets across its jurisdictions; the formally registered core is set out alongside.

Continuously validated against the field. Every deployed unit streams live telemetry at one-minute intervals, so bench engineering is continuously checked against real operating data. A change made on the bench can be evaluated against a full operating history rather than against a simulation.

The operational forge. The centre is described in the Group’s own documentation as a full-stack engineering operation rather than a research laboratory: it covers the complete AGS module lifecycle, from subsurface engineering and wellbore architecture, through closed-loop manufacturing and proprietary working-fluid chemistry, to surface power generation, controls integration, monitoring and continuous-operation field validation. Its mandate is industrialisation: it is where the world-record minimum operating temperature was achieved, where the first TRL-9 commercial module was built and deployed, and where the manufacturing know-how, the proprietary intellectual property and the deployable engineering force reside.

IP PORTFOLIO AT A GLANCE

ASSET	COUNT
Global portfolio	180+ patents & assets
Registered patents	32: 26 national · 6 international (USA, EPO, Algeria, South Africa)
Patent applications	9: 7 national · 2 international
Trademarks	22 registered, including RePG Aqua (WIPO)
Industrial designs	4 registered · 1 pending
Utility models	1 registered · 1 pending

WHY 55°C IS STATED AS A RECORD

The Group records 55°C as the minimum operating temperature achieved by the platform: approximately 25°C below the conventional industry threshold. The commercial consequence is stated in the same documentation: it places within reach an estimated 100+ GW of geothermal capacity that is stranded at temperatures conventional ORC machines cannot economically convert.

THE FULL AGS CAPABILITY SCOPE

CORE CAPABILITY	WHAT IT COVERS
Subsurface engineering	Deep wellbore design, drilling supervision, formation thermal modelling, completion strategy
Closed-loop manufacturing	Proprietary loop architecture, working-fluid chemistry, sealing and thermal performance optimisation
Surface power systems	ORC turbine integration, condenser design, power electronics, grid interconnection
Monitoring & controls	Real-time telemetry, AI-driven anomaly detection, predictive maintenance
Industrial site integration	Project management for industrial customer deployment, EPC supervision, commissioning, long-term operation and maintenance

INSTITUTIONAL CHANNELS

World Bank and United Nations: recorded by the Group as the strategic channel for AGS deployment into emerging-market industrial decarbonisation.

DEVELOPMENT FINANCE

African Development Bank · SEFA: the Sustainable Energy Fund for Africa, project preparation and early-stage capital; the centre is the operational counterpart for engagement.

POLICY FRAMEWORKS

European Union REPowerEU, aligned with the Horizon Europe trigeneration geothermal work; U.S. DOE Enhanced Geothermal Shot, whose scope covers the platform’s technical target band.

09 · THE TECHNOLOGY BUILT HERE

The RePG low-temperature ORC platform

One modular turbine architecture that turns almost any continuous heat stream above about 55°C into electricity, in a fully closed loop.

The technology designed, built and tested at Bursa is a proprietary, modular Organic Rankine Cycle. Like every ORC, it vaporises an organic working fluid, a fluid that boils well below water, expands it through a turbine to produce mechanical work, then condenses and returns it to the evaporator in a sealed loop with no fluid loss and no combustion.

The five-component closed cycle. (1) A pump pressurises the RePG fluid. (2) The evaporator transfers heat from the source, flue gas, geothermal water, solar, engine or compressor circuits, into the fluid. (3) The recuperator recovers heat from the turbine exhaust to lift overall cycle efficiency. (4) The condenser cools and liquefies the fluid, producing useful warm water as a by-product. (5) The turbine converts the expanding fluid into electricity through a directly-coupled asynchronous generator.

What makes it different. The defining engineering property is the operating-temperature envelope. Where conventional ORC vendors need source temperatures of 70-150°C to be viable, the RePG platform operates efficiently from about 55°C. That single property is the foundation of the entire commercial opportunity.

#	COMPONENT	FUNCTION
1	Pump	Pressurises the working fluid
2	Evaporator	Transfers source heat into the fluid
3	Recuperator	Recovers turbine-exhaust heat
4	Condenser	Liquefies fluid; yields warm water
5	Turbine	Drives a directly-coupled generator

WHY 55°C CHANGES EVERYTHING

- **Geographic universality:** heat at 55-80°C exists at sub-kilometre depths almost anywhere, freeing geothermal from volcanic geology.
- **Thermal-stream universality:** industrial waste heat at 55-110°C is the largest unrecovered energy source in the economy.
- **Data-centre compatibility:** server cooling loops fall inside the envelope, an emerging high-value application.

THE ENGINEERING CLAIM, STATED PRECISELY

The RePG platform is not claimed to be more efficient than a large utility-scale ORC at high source temperature. It is claimed to be a net electrical generator in a band, from about 55°C to 80°C at micro to small scale, in which conventional ORC machines cannot economically operate at all. The bench table on the following page is the measurement behind that claim, and the two field installations later in this part are its confirmation over more than a year of continuous running.

~55°C

OPERATING FLOOR OF THE PLATFORM

~25°C

BELOW THE CONVENTIONAL THRESHOLD

100+ GW

STRANDED GEOTHERMAL CAPACITY ADDRESSABLE

TRL 9

FLEET OPERATING IN THE FIELD

09 · MEASURED PERFORMANCE

Performance across the temperature band

Measured gross and net efficiency from a controlled waste-heat-recovery test bench, 60°C to 100°C source temperature.

HW IN (°C)	HW OUT	CW IN	GROSS KWE	NET KWE	GROSS EFF.	NET EFF.
100	93.6	32.0	6.75	4.50	8.44%	5.62%
95	89.2	32.8	5.85	4.00	8.49%	5.80%
90	84.2	33.1	5.35	3.70	7.49%	5.18%
85	79.9	32.4	4.95	3.40	7.59%	5.21%
80	75.1	32.2	4.30	2.90	6.99%	4.71%
75	70.8	31.2	3.40	2.30	6.14%	4.15%
70	66.0	31.1	2.70	1.80	5.48%	3.66%
65	62.0	29.9	2.05	1.20	4.90%	2.87%
60	57.8	29.0	1.45	0.90	4.06%	2.52%

Source: RePG waste-heat-recovery test table (thermal power plant bench). Net efficiency rises with source temperature; the platform remains a net generator down to 60°C, where conventional ORC cannot operate.

THREE PRODUCT FAMILIES ON ONE PLATFORM

PARAMETER	COMPACT (S)	STANDARD (M)	INDUSTRIAL (L)
Energy capacity	1-5 kWe	5-75 kWe	75 kWe and above
Heat-transfer fluid	Water / oil / gas	Water / oil / gas	Water / oil / gas
Fluid temperature	50-240°C	50-240°C	50-240°C
Fluid connection	1" threaded / flanged	2" threaded / flanged	2"+ threaded / flanged
Operating pressure	Max. 45 bar	Max. 45 bar	Max. 45 bar
Voltage / phase / freq.	400 V AC · 3ph · 50-60 Hz	400 V AC · 3ph · 50-60 Hz	400 V AC · 3ph · 50-60 Hz
Footprint (W×L×H mm)	850×850×1500	1100×1450×1500	1150×1650×1500
Weight	250 kg	500 kg	750 kg

READING THE TABLE

Net efficiency is the figure that matters commercially: it is what remains after the unit’s own pumps and controls have been supplied. At 100°C the platform returns 4.50 kWe net from the bench configuration; at 60°C it still returns 0.90 kWe net: low in absolute terms, but positive in a band the industry treats as unusable.

ONE ARCHITECTURE, THREE SIZES

The three product families are not three machines. They are the same modular turbine architecture, the same working-fluid chemistry and the same control stack, packaged in three physical envelopes. That is why a change validated on one size propagates to all three.

09 · ONE PLATFORM, MANY HEAT SOURCES

Where the same machine goes to work

What changes between applications is the heat source, not the core machine: the basis of the platform’s scalability.

APPLICATION	HEAT SOURCE	TEMP. BAND	PROOF / REFERENCE
Industrial waste heat	Flue gas, dryers, hot process lines	55–110°C	Hayat Kimya: 75 kWe, 15+ months
Geothermal reinjection	Low-temp reinjection / spent brine	45–75°C	AFJET: 15 kWe, live dashboard
Compressor / engine heat	Compressor oil, engine coolant	65–110°C	Borusan Mannesmann award unit
Data-centre cooling	Server cooling loops	55–70°C	Emerging high-value application
Oil & gas co-produced water	Depleted-well hot water	55–90°C	Distributed micro-scale fleet
Residential / boiler	NG-boiler closed circuit	60–90°C	KOSGEB small-scale prototype

THE FULL PRODUCT RANGE FROM ONE PLATFORM

PRODUCT	INPUT SOURCE	RANGE
RePG Industrial ORC	Flue-gas / process waste heat	0.5–75+ kWe
RePG Geothermal ORC	Reinjection / low-temp brine	5–75+ kWe
RePG Compressor unit	Compressor oil / engine heat	4–6 kWe
RePG Home / boiler	NG-boiler closed circuit	1–5 kWe
RePG AQUA	Air humidity + heat exchange	Water + power
RePG AGS (in build)	Closed / open-loop geothermal	1 MW pilot

DEPLOYMENT MODEL

Every unit is factory-built and containerised, connected to an existing thermal stream in 8–14 weeks from order to commercial operation, with no incremental civil works. A 1 MWe installation clusters modules in arrays needing under 500 m² of flat land, with staged or simultaneous deployment.

REPG AQUA: WATER AND POWER

The AQUA line extends the platform to atmospheric-water generation, pairing power with a multi-stage filtration chain: particle, sediment and carbon; membrane, UV and alkaline-mineral. The water output is tested and approved by the Ministry of Health, an important credential for emergency, defence and remote deployments. The core conversion principle across all products is latent and low-grade heat utilisation: capturing heat below 100°C that other systems discard, at 0.1–25 kWh and beyond.

6

APPLICATION FAMILIES

8–14

WEEKS, ORDER TO OPERATION

<500 m²

FLAT LAND FOR A 1 MWE ARRAY

3

PRODUCT SIZES, ONE ARCHITECTURE

10 · STRATEGIC ROLE AND COMPETITIVE POSITION

Why Bursa is the strategic core

The facility is not a cost line; it is the proof, the IP engine, and the bridge between a Turkish technology house and global deployment.

1 · THE PROOF LAYER

Two field units built here run continuously and stream public telemetry. Capability is asserted once; a working factory plus live data is believed permanently.

2 · THE IP ENGINE

The 32 registered patents and the proprietary control stack originate here. This is what makes the platform defensible rather than a commodity assembly.

3 · THE DE-RISKING BRIDGE

The same proven turbine underpins the 1 MW Advanced Geothermal Systems pilot in build at the centre: the bridge from today's micro-scale fleet to MW-class deployment.

THE COMPETITIVE POSITION BELOW 80°C

VENDOR	MIN. TEMP.	MIN. UNIT	DEPLOY	PRIMARY FOCUS
RePG (this centre)	55°C	0.5 kWe	8-14 weeks	TRL 9 at 55°C
Ormat (USA)	≥150°C	200+ kWe	Multi-year	Utility geothermal
Turboden / Mitsubishi	≥80°C	200+ kWe	18-36 mo	Large industrial WHR
ElectraTherm (USA)	≥77°C	65-110 kWe	Months	Small industrial / geo
ORCAN Energy (DE)	≥70°C	10-50 kWe	Months	Engine waste heat
Climeon (SE)	≥70°C	150 kWe	Months	Marine / industrial
ENOGIA (FR)	≥80°C	10-100 kWe	Months	Small industrial EU
Exergy / Kaishan (CN)	≥80°C	100+ kWe	Months	Large industrial

The real competitive position. Established ORC vendors are not weak: they simply operate above the RePG envelope. The conclusion is not that RePG beats rivals on their own ground; it is that the 55-80°C band at micro-scale is a segment where no competitor has a commercial product at TRL 9. Geothermal reinjection (45-75°C) and data-centre cooling (55-70°C) are described in the literature as uneconomic for conventional ORC. That gap is the centre's strategic asset.

What the centre secures. Sovereignty of the technology, with no third-party dependency; speed, through an 8-14 week deployment cycle; and a defensible intellectual-property position. Those are the three things a pure trading operation cannot provide, and they are the reason the manufacturing floor is kept inside the Group rather than contracted out.

THE OWNERSHIP AND COLLABORATION

RePG Energy is the technology developer and sole IP owner; The Rob Rockefeller Standard Carbon LLC holds exclusive global deployment and commercialisation rights. RePG retains manufacturing and engineering at Bursa; RRSC is the commercial vehicle for international deployments, sovereign partnerships and investment structures. All IP and technical documentation is available for review under a non-disclosure agreement.

11 · CERTIFICATIONS & TEST EVIDENCE

Held in hand, not just claimed

The RE-75kW platform carries a CE Attestation of Compliance, two ISO management systems, and four named test reports.

This is the section that separates the centre from a pre-revenue technology story. The platform and the company carry a coherent, current, externally-issued certification stack. Each document is real, dated, and reproduced on these pages.

The certified product. Across the CE file and the four test reports the certified unit is consistently identified as the Atık Isı ORC Sistemi, model RE-75kW, serial 23-05-E-75, rated 400 V / 50 Hz / 75 kW, year of production 2023: the same platform described earlier in this part.

Who issued it. The CE Attestation and the four test reports were issued by INTERTURK Uluslararası Belgelendirme Ltd. Şti. (İzmir). The two ISO certificates were issued by IQR International Certification Services LLC (Dover, Delaware), accredited by IAS under MSCB-135 and IAF.

Test provenance. Instrument METREL serial 15390082 (calibrated 19.06.2025); test venue Derince / Kocaeli; persons of record Burhan Avcı (test) and Ergün Cengiz (approval). The Attestation is issued under the European Commission note of 14 September 2022 (Ares (2022) 6342894) on voluntary certification with a non-notified procedure.

THE CERTIFICATION STACK

- CE Attestation: INT-26-124RES-01, valid to 03.05.2027
- ISO 9001:2015: QMS-012487, valid to 19.11.2026
- ISO 14001:2015: EMS-012487, valid to 19.11.2026
- Four test reports: ISO 12100, EN 60204-1, IEC 61000-6-2 / 6-4
- Wider company systems reported: ISO 22716, ISO 10002, ISO 45001, ISO 31000

THE THREE EU DIRECTIVES DECLARED

DIRECTIVE	REFERENCE	WHAT IT GOVERNS
Machinery Directive	2006/42/EC	Mechanical safety, guarding, risk assessment of the machine as a whole
Low-Voltage Directive	2014/35/EU	Electrical equipment safety within defined voltage limits
EMC Regulation	2014/30/EU	Electromagnetic compatibility: emission and immunity

THE FOUR TEST REPORTS · TEST NO. INT-26-124RES-01

STANDARD	TEST REPORT	DATE	NOTE
EN ISO 12100:2010	Machine Safety & Design Analysis	26.02.2026	23-page report
EN 60204-1:2018	Electrical Safety of Machinery	26.02.2026	METREL instrument
EN IEC 61000-6-2:2019	EMC Immunity (industrial)	26.02.2026	Partial, per request
EN IEC 61000-6-4:2019	EMC Emission (industrial)	26.02.2026	12-page report

VALIDITY AT A GLANCE

CERTIFICATE	ISSUED	VALID TO
CE / INTERTURK	04.05.2026	03.05.2027
ISO 9001:2015	20.11.2025	19.11.2026
ISO 14001:2015	20.11.2025	19.11.2026

11 · THE DOCUMENTS THEMSELVES

The CE attestation and the two ISO certificates

Reproduced as issued: the INTERTURK Attestation of Compliance and the IQR management-system certificates.



CE ATTESTATION INT-26-124RES-01



ISO 9001:2015 · QMS-012487



ISO 14001:2015 · EMS-012487

Reference No.	INT-26-124RES-01
Applicant / Manufacturer	REPÇİ ENERJİ SİSTEMLERİ SAN. VE TİC. A.Ş.
Product	Atık Isı ORC Sistemi: waste-heat ORC system, model RE-75kW
Directives	2006/42/EC · 2014/35/EU · 2014/30/EU
Issue / expiry	04.05.2026 / 03.05.2027 · INTERTURK, İzmir

WHY A MANAGEMENT-SYSTEM CERTIFICATE MATTERS TO A BUYER

A product certificate says that one machine model conforms. A management-system certificate says that the organisation which produces it operates a documented, audited process for doing so repeatedly: design control, supplier control, non-conformity handling, corrective action and continual improvement. For an institutional buyer the second is often the harder question, and it is the one ISO 9001 answers.

12 · LIVE DEPLOYMENTS & THE 1 MW AGS PILOT

From the bench to the field

Two machines built here run continuously in the field today; the flagship 1 MW AGS pilot is in build at Bursa now.

The centre’s credibility rests on machines that left the floor and run in production. Two installations in Türkiye generate electricity continuously and stream live SCADA telemetry available for independent review.

Hayat Kimya: industrial waste heat. A 75 kWe unit recovering flue-gas waste heat at 70–110°C (field average 70–85°C), in continuous operation since December 2024, more than fifteen months, averaging 1,100–1,250 kWh/day. Estimated payback two to three years at about €0.10/kWh.

AFJET: geothermal reinjection. A 15 kWe unit recovering energy from geothermal reinjection water at 45–75°C, a range conventionally considered too low for ORC, averaging about 281 kWh/day, with a publicly-accessible live dashboard.

The 1 MW AGS pilot. The flagship deliverable in build at Bursa extends the same proven turbine into closed and open-loop geothermal, targeting a TRL 7 demonstration in 2026 and commercial deployment from 2027.

Everything is inspectable. Both field units are open for inspection, and the AFJET dashboard is publicly accessible without authentication. The Bursa centre is open for a walk-through of the 1 MW pilot’s engineering progress.

THE OPERATING FLEET

	HAYAT KIMYA	AFJET
Application	Flue-gas WHR	Geothermal reinjection
Heat source	70–110°C	45–75°C
Capacity	75 kWe	15 kWe
Net output	~50.5 kW	~11.7 kW
Daily	1,100–1,250 kWh	~281 kWh
Runtime	15+ months	70+ days
Cumulative	>25,887 kWh	>17,724 kWh

2

LIVE FIELD
INSTALLATIONS

1 MW

AGS PILOT IN BUILD

2027

TARGETED
COMMERCIAL
DEPLOYMENT

THE HAYAT KIMYA BENCHMARK: UNIT SPECIFICATION AND MEASURED OPERATING POINT

SPECIFICATION	VALUE
Installed capacity	75 kWe
Unit dimensions	2,200 × 3,500 × 3,000 mm
Unit weight	4,500 kg
Hot-water in / out	100°C / 79°C · flow 45 m³/h
Cold-water in / out	32°C / 41°C · flow 89 m³/h

LIVE MEASUREMENT	VALUE
Gross power (measured)	67.6 kW
Internal self-consumption	17.1 kW
Net instant output	50.5 kW
High / low pressure	~30.89 bar / ~9.48 bar
Monitoring	Cloud SCADA, 1-minute telemetry

12 · MEASURED FIELD DATA, NOT PROJECTIONS

The AFJET geothermal deployment, in detail

Afyonkarahisar, a major Turkish geothermal hub: the unit recovers electricity from reinjection water in a band conventional ORC cannot use.

LIVE SCADA SAMPLE, HAYAT KIMYA: STABLE NET OUTPUT (1-MINUTE TELEMETRY)

TIME	HW IN	HW OUT	TURB. IN	TURB. OUT	HIGH / LOW P (BAR)	NET KW
00:00	72.0	66.7	71.0	42.4	13.78 / 4.18	10.1
00:06	72.1	66.7	71.0	42.6	13.83 / 4.27	10.9
00:12	72.1	66.8	71.0	42.6	13.66 / 4.18	11.4
00:18	71.7	66.3	70.7	42.4	13.48 / 4.13	11.4
00:24	71.6	66.3	70.7	42.4	13.74 / 4.14	11.4
00:30	71.5	66.0	70.4	42.2	12.94 / 4.12	11.4



AFJET GEOTHERMAL WELLHEAD, AFYONKARAHISAR

EXISTING INFRASTRUCTURE THE REPG UNIT CONNECTS TO · ORIGINAL PHOTOGRAPH

AFJET THERMAL & PERFORMANCE, AS RECORDED

- Hot-water inlet 72°C · outlet 66°C · flow 25 m³/h
- Total thermal input: 175 kWt
- Ambient (annual average): 10°C (range 0.4–22.2°C)
- Net electric output: ~11.7 kW average (12.8 kW at ~10°C)

AMBIENT	NET OUTPUT	AMBIENT	NET OUTPUT	AMBIENT	NET OUTPUT
-10°C	12.80 kW	10°C	10.10 kW	30°C	6.91 kW
0°C	11.45 kW	20°C	8.87 kW	35°C	5.97 kW

Why the data matters. Over more than fifteen months the Hayat Kimya unit has held 50.5 kW net around the clock, with daily output consistently in the 1,100–1,250 kWh band: the operational reliability that turns a technology claim into predictable, bankable revenue. The full one-minute history is available on the live dashboard.

Why the geothermal case matters. Output rises as ambient temperature falls, because condensing improves: the unit delivers most when grids are most stressed. Cumulative production already exceeds 17,724 kWh on the live dashboard, validating the platform in a temperature band the entire ORC industry treats as uneconomic. For a geothermal operator this is not a new resource: it is electricity recovered from water that was already being reinjected.

“ The AFJET unit does not need a new well, a new licence or a new resource. It needs water that was going back into the ground anyway.

12 · PROGRAMMES, ROADMAP & WHY IT MATTERS

A funded R&D pipeline and a clear path

Public-programme backing, an international research footprint, and a staged 2024-2030 roadmap anchored at Bursa.

The Bursa centre is not a static factory: it is an active R&D node inside a funded programme pipeline that de-risks the technology and extends its reach. Ongoing programmes include Bursa ULUTEK Teknokent work on ORC- and solar-supported air-to-water and green-hydrogen production; TÜBİTAK 1509 (Türkiye-Singapore Eureka Network) on electricity from waste heat with an innovative refrigerant mixture; and Horizon Europe work on a next-generation flexible trigeneration geothermal ORC plant.

Why the R&D matters. The European prize behind the Horizon work: converting existing geothermal plants into flexible trigeneration could supply an estimated 215 TWh of thermal energy across the EU, about 4% of Europe’s annual heat demand, for an estimated €9.6 billion in annual savings. The engineering for it is developed here.

A track record of completed projects. The centre’s pipeline builds on completed work with TÜBİTAK (BiGG, 1071, 1511), H2020 SME Phase-I, KOSGEB, and multiple ULUTEK and İTÜ ARİ Teknokent projects spanning power electronics and control for industrial ORC, heat exchangers, and high-pressure pumps.

TECHNOLOGY READINESS ROADMAP

YEAR	MILESTONE	STATUS
2024	AGS R&D initiated at Bursa	Done
2025	Component & integration testing	Done
2026	1 MW AGS pilot · TRL 7 demonstration	In progress
2027	First commercial deployment	Target
2029+	Global rollout · TRL 9 at MW class	Target

IN SUMMARY: WHAT BURSA IS

WHAT	THE FACT	THE EVIDENCE
The facility	4,000 m² main hub	Operational centre, Nilüfer / Çalı
The people	85 engineers, 8 disciplines	In-house design-build-test
The platform	Modular ORC, ~55°C, RE-75kW	TRL 9 fleet operating
The proof	CE · ISO 9001 · ISO 14001	INTERTURK + four test reports
The future	1 MW AGS pilot in build	TRL 7 target 2026



THE BURSA ENGINEERING CENTER: WHERE INNOVATION LIVES

ROOF ENGINEERING, REAL MACHINES, REAL RESULTS · ORIGINAL PHOTOGRAPHS

WHAT A VISITOR SEES

A visit to Nilüfer takes about half a day. The route runs from the machining and fabrication area, through heat-exchanger and skid assembly, to the electrical and control-cabinet build, ending at the test bench where a unit is run across its temperature band, and then to the screen showing the field units running. Copies of the CE Attestation, the four test reports, the two ISO certificates, the IP schedules and the bench-test tables are available under a non-disclosure agreement. The field dashboards need no agreement at all.

PART THREE · CENTRE TWO

Montegranaro, Italy

The research and development centre of the Group

A 1,400 m² strategic-independent research and development centre at Montegranaro, province of Fermo, operated in technical partnership with Think Green Technologies S.A.: where a technology is carried from first principle through to a working, fully instrumented prototype, across green energy, artificial intelligence applied to sustainability, and advanced technological research.



THE MONTEGRANARO CENTRE

ORIGINAL DOCUMENTATION

IN THIS PART

- 13 The centre at a glance
- 15 Governance and the engineering team
- 17 The technical partner and the TEAS platform
- 14 The site, the identity and the registration
- 16 The facility and the testing infrastructure
- 18 HG4HOME and the wider technology portfolio

1,400 m²

COVERED AREA

14

ENGINEERING STAFF

3

MISSION SECTORS

7

TECHNICAL AREAS

2

ISO SYSTEMS

13 · THE CENTRE AT A GLANCE

A research centre built for the energy transition

RRSC has established a strategic-independent research and development centre at Montegranaro, in the province of Fermo, dedicated to three converging disciplines: green energy, artificial intelligence applied to sustainability, and advanced technological research.

The Montegranaro facility is the Group's own engineering and research centre in Italy. It is neither a commercial office nor a subcontracting workshop. It is a laboratory-grade industrial site of 1,400 square metres, staffed by a permanent engineering organisation and equipped to carry a technology from first principle through to a working, fully instrumented prototype.

Three activities define its mandate. The first is **green energy**: sustainable and innovative energy solutions, from the treatment of process fluids to the design of self-sustaining generation architectures. The second is **artificial intelligence and sustainability**: the use of machine intelligence to monitor, model and optimise energy systems and their environmental performance. The third is **technological research**: advanced research and technological development conducted on the Centre's own benches, with its own instrumentation and its own engineering staff.

The Centre is constituted as a strategic-independent research and development centre, and that status carries substance. It sets its own research agenda, retains its own technical personnel, owns its test infrastructure, and is free to enter programmes of its own definition, while remaining fully integrated in the Group's international engineering network.

Its output is engineering evidence. A concept becomes a result at Montegranaro when a unit has been built, instrumented, run under recorded conditions and documented to a standard that allows an independent party to reproduce it. That discipline is what distinguishes a research centre from a demonstration.

Its technical partner is **Think Green Technologies S.A.**, a Swiss-Italian research and development company whose work on the molecular treatment of water underpins several of the technology families presently under development at Montegranaro. The partnership brings to the Centre an established portfolio of filed and pending process patents, together with the certified quality and environmental management systems under which that portfolio is developed.

The location was chosen deliberately. The Fermo-Macerata belt is among the most specialised manufacturing districts in central Italy, with a long tradition of precision mechanics, industrial automation, tooling and high-quality subcontracting. A research centre placed inside that ecosystem can prototype quickly, source components within a short radius, and recruit from a workforce that has grown up alongside machine tools.

The Centre is deliberately small and deliberately deep. Fourteen resident engineers and technical specialists are enough to hold several research lines open simultaneously, and few enough that every result has a name attached to it. There is no layer between the person who conceives a modification and the person who measures its effect.

NOTHING PRESENTED AS FINISHED WHERE IT IS NOT

The Centre distinguishes between a research direction, a characterised property, a running prototype and a reproducible demonstrator, and names the stage each programme has reached. This part presents the Centre as it stands today: its identity and governance, its permanent team, its physical plant, the laboratory and testing infrastructure installed on site, the research programmes now in progress, and its position within the Group's network.

1,400 m²

COVERED AREA

14

ENGINEERING STAFF

3

MISSION SECTORS

7

TECHNICAL AREAS

2

ISO SYSTEMS

14 · THE SITE

Identity, status and registration

A two-storey technical building on the industrial belt of Montegrano: engineering offices above, laboratories, testing areas and the production hall at ground level.

Denomination	R.Rockefeller S.C. Engineering Center Italy
Centre type	Strategic-Independent Research & Development Centre
Mission sectors	Green Energy · Technological Research · Artificial Intelligence in the Energy Sector
Site	Via Massimo d'Antona snc, 63812 Montegrano (FM), Italy
Covered area	1,400 m²: offices, laboratories, testing areas and production hall
General Director	Andrea Miano
Headquarters	RRSC Italy Branch, Milan (main hub)
Group	RRSC, Delaware, United States of America
Technical partner	Think Green Technologies S.A., Switzerland / Italy
Partner systems	ISO 9001 and ISO 14001, ILC Certification
Web	www.therockefeller-sct.com

The building was selected and fitted for research work rather than adapted from office use. The ground floor is a clear-span industrial volume with a sectional door, floor loading suitable for full-size prototype hardware, and services distributed overhead so that bench positions can be changed without civil work.

The upper floor carries the technical offices and the direction of the Centre, placed directly above the hall. The distance between a workstation and the bench it serves is measured in metres, which is the single most effective way to shorten the cycle between a design decision and a measurement.

Externally the Centre is identified by the Group's emblem, the denomination Engineering Center (Italy), the Italian national colours and the name of the technical partner, carried both on the external monolith at the entrance and on the plaque at the door.



R. Rockefeller S.C.
ENGINEERING CENTER (ITALY)

CENTER NAME
R. Rockefeller S.C.
Engineering Center (Italy)

CENTER TYPE
Strategic-Independent
Research & Development Center

CENTER SECTORS

- Green Energy
- Technological Research
- AI in the Energy Sector

HEADQUARTER
RRSC Italy Branch
Milan (Main Hub)

TECHNICAL PARTNER
THINK GREEN TECHNOLOGIES SA
Switzerland - Italy

GENERAL INFORMATION

TECHNICAL PARTNER

R. Rockefeller S.C.
ENGINEERING CENTER (ITALY)
TECHNICAL PARTNER

THINK GREEN[®]
TECHNOLOGIES

• MONTEGRANO (FM) ITALY •

CERTIFICATIONS

ISO 9001
ILC Certification

THINK GREEN TECHNOLOGIES SA
SWITZERLAND - ITALY

ISO 14001
ILC Certification

Chemin des Tournesols, 5 - 1290 Chavannes des Bois - Switzerland
Via Massimo d'Antona snc - 63812 Montegrano (FM) - Italy

14 · THE CENTRE

Independence, partnership and quality discipline

Three commitments define how work is conducted at Montegrano: independence of research, transparency of partnership, and a documentary discipline strong enough to withstand independent verification.

Strategic-independent status. The Centre is not organised as a service unit dependent on a single client or a single programme. It holds its own laboratory assets, its own instrumentation and its own permanent staff, and it is therefore able to sustain multi-year research lines whose results belong to the Centre and to the Group.

Quality and environment. The technical partner operates certified quality and environmental management systems to ISO 9001 and ISO 14001 under ILC Certification. Work at the Centre follows the documentary discipline those systems require: numbered procedures, recorded test conditions, retained instrument logs and controlled revision of drawings.

Technical partnership. Think Green Technologies S.A. contributes the process technologies developed around the molecular treatment of water, together with the industrial know-how accumulated in their construction. The partnership is declared openly on the building signage and in every technical dossier issued from Montegrano.

Evidence before claim. No performance figure leaves the Centre without the run that produced it. Test conditions, instrument identity and calibration date are recorded with the result, and the raw acquisition file is retained. Programmes are reported at their true stage: research direction, characterised property, running prototype or reproducible demonstrator, and a research direction is never presented as a delivered result.



LABORATORY & TESTING AREA: CONTROL PANEL, DRILLING STATION AND TOOL CABINETS

BENCH-SIDE ANALYSIS AND RECORDED TEST OPERATION · ORIGINAL PHOTOGRAPH

15 · GOVERNANCE AND THE ENGINEERING TEAM

Fourteen engineers, a deliberately flat structure

A general direction, a mechatronics function, and specialist engineering staff working directly on the benches.

NAME	ROLE	RESPONSIBILITY
Andrea Miano	General Director, RRSC Engineering Center, Montegranaro	Overall direction of the Centre: research programming, technical and industrial relations, governance of the site, and representation of the Centre before institutional and industrial counterparts within the Group's engineering network.
Mauro Noviello	Head of Mechatronics	The mechatronics function: electro-mechanical architecture, control and automation of the test rigs, PLC programming, instrumentation chains, and the integration of mechanical, hydraulic, electrical and control subsystems into working prototypes.
Edoardo Orlandi	Mechatronics office	Design and development: modelling and detailing of assemblies, preparation of test benches, wiring and control schematics, and the technical documentation that accompanies each prototype through its build and validation cycle.
Rossano Berdini	Mechatronics office	Design and development: component selection, bench instrumentation, execution and recording of test campaigns, and support to the assembly and commissioning of the Centre's experimental units.

Ten further specialised engineers complete the permanent staff, covering mechanical design, electrical and electronic engineering, control and automation, process chemistry, thermal and fluid engineering, measurement and instrumentation, software and data analysis, and quality assurance. Together with the direction and the mechatronics office they bring the Centre to fourteen resident technical people.

The organisation is built around benches rather than departments. A research line is assigned to a small mixed team, typically a design engineer, a control engineer and a test engineer, which owns the programme from concept through to instrumented demonstration. The mechatronics office provides the common backbone: rig architecture, control hardware, data acquisition and the electrical safety discipline shared by every bench.

This arrangement keeps the distance between an idea and a measurement very short. A modification conceived in the technical office on a Monday can be machined, wired, instrumented and run on the bench within the same working week, with results recorded and archived under the Centre's documentation procedures.

Recruitment draws on the engineering faculties of the Marche and on the industrial workforce of the Fermo-Macerata district. The Centre maintains a deliberate balance between experienced industrial engineers, who carry the practical judgement that prototype work demands, and younger specialists in modelling, data science and control.

Continuity of staff is treated as a technical asset. Prototype engineering depends on accumulated judgement: knowing which failure modes matter, which measurements lie, which supplier will hold a tolerance. That judgement resides in people rather than in procedures, and the Centre is staffed and organised on the assumption that its engineers will still be there when the programmes they opened reach maturity.

Responsibility is personal. Each programme carries the names of the engineers who conceived, built and measured it, and each test record identifies the engineer who conducted the run. In a fourteen-person organisation this is not a formality: it is the mechanism by which technical judgement is developed and by which the Centre can answer, years later, for any result it has published.

14	1	3	10
RESIDENT TECHNICAL PEOPLE	GENERAL DIRECTION	MECHATRONICS OFFICE	SPECIALIST ENGINEERS

16 · THE FACILITY

1,400 square metres of innovation and technology

State-of-the-art spaces designed for engineering excellence, research, development and the creation of sustainable, high-performance solutions.



ENGINEERING CENTER INTERIORS, MONTEGRANARO (FM), ITALY

SEVEN DISTINCT TECHNICAL AREAS ACROSS 1,400 SQUARE METRES · ORIGINAL DOCUMENTATION

Advanced Engineering Area. The principal development hall, occupied by modular aluminium-profile test frames carrying process modules, control cabinets, power electronics and instrumentation. Rigs are built to be reconfigured: every frame accepts new modules without structural rework.

Technical Support Area. Racking, spares, sub-assemblies and the workshop equipment that keeps the benches running: drilling and machining, tool storage and consumables.

Production Hall. A clear-span area for assembly, integration and the staging of larger units, permitting complete systems to be built up, run and rebuilt in sequence.

Laboratory & Testing Area. Fitted benches with electrical distribution, measurement instrumentation and fluid handling, for characterisation work, endurance runs and the controlled preparation of process liquids.

Precision Instrumentation. A dedicated station for measurement and calibration, with fixed instruments, optical and dimensional equipment, and the reference standards against which bench instrumentation is verified.

Technical and Executive Offices. Design and analysis workstations adjacent to the hall, together with the direction of the Centre and its meeting facilities for visits.

16 · THE FACILITY

Laboratories, benches and testing infrastructure

Everything the Centre claims, it measures on its own instruments. The testing infrastructure is the reason the site exists in this form.



PRODUCTION HALL AND TEST FLOOR: CLEAR-SPAN AREA WITH OVERHEAD SERVICES

INSTRUMENTATION TROLLEY, WORKBENCH WALL, RACKING AND ANALYSIS STATION · ORIGINAL PHOTOGRAPH

The hall is serviced overhead: compressed air, electrical distribution and extraction run along the roof structure and drop where they are needed, so that bench positions can be moved without civil work. Floor loading and the sectional door at the end of the hall allow complete units to be brought in and taken out on pallets.

Measurement is treated as a discipline in its own right. Each bench carries its own acquisition chain; readings are logged rather than observed, and test conditions, ambient temperature, supply voltage, flow rates, run duration, are recorded alongside the results. Instruments are verified against the references held in the precision instrumentation station.

Rig architecture. Every experimental unit at Montegranaro is built on the same principle: a modular aluminium-profile structure, a dedicated electrical cabinet, a programmable controller, a defined instrumentation set and a monitoring surface. What changes between programmes is the process module mounted inside it. Because frames, cabinets and control hardware are common across the site, a retired rig is re-tasked rather than

Electrical safety governs the layout. Distribution boards, residual-current protection, emergency stops and lock-out points are provided at every rig. Prototype work involving power electronics, high currents and pressurised fluids is carried out under written procedure, with two people present for energised operations.

The workshop capability on site, drilling, light machining, fabrication of brackets and manifolds, wiring and panel building, means that most modifications are made in-house. This removes the days of delay that external fabrication would otherwise impose on every iteration.

Materials and process liquids are handled under controlled conditions, with labelled storage, recorded batches and disposal routes defined in advance. The environmental management discipline of the partnership applies to the Centre's own consumption as much as to the technologies it develops.



16 · THE FACILITY

The advanced engineering area

Several rigs in parallel, each at a different stage: the mechanism that lets a small team sustain a high rate of iteration.



ADVANCED ENGINEERING AREA: INSTRUMENTED TEST RIGS UNDER OPERATION

MODULAR FRAMES, CONTROL CABINETS AND MOBILE INSTRUMENTATION · ORIGINAL PHOTOGRAPH

The advanced engineering area is where the Centre's active programmes live. Several rigs stand in parallel, each at a different stage: one under build, one under commissioning, one running a test campaign, one being stripped for its next configuration. Working several stages simultaneously is what allows a small team to sustain a high rate of iteration.

Power conversion equipment, charging and distribution units, process modules and their control cabinets are mounted on the frames in the configuration required by the programme. Cabling is run in flexible conduit so that a unit can be moved without rewiring, and every connection point is identified to the schematic. Mobile tool cabinets and instrumentation trolleys sit alongside the rigs: engineers work at the machine, not away from it.

Every run is recorded. The acquisition file, the conditions of the run, the configuration of the rig and the identity of the engineer conducting it are archived together. A result that cannot be traced back to its configuration is not treated as a result.

Artificial intelligence on the bench. Acquired data feed the Centre's modelling work. Machine-learning models are trained on run histories to characterise the operating envelope of a unit, to detect drift and anomaly ahead of failure, and to search the parameter space for the settings that give the best energy return. This is the practical meaning of artificial intelligence and sustainability at Montegrano: intelligence applied to real, measured energy systems rather than to abstractions.

3

MISSION LINES

1

CONTINUOUS CYCLE

14

NAMED ENGINEERS

4

GROUP CENTRES

17 · MISSION AND RESEARCH

The technical partner and the TEAS platform

Think Green Technologies S.A., Switzerland and Italy, is the Centre's declared technical partner. Its research programme on the molecular treatment of water provides the process foundation for several of the technology families developed at Montegranaro.



ENTRANCE PLAQUE

ORIGINAL PHOTOGRAPH

Partner	Think Green Technologies S.A., Lugano, Switzerland
Swiss UID	CHE-284.324.657
Italian R&D	Think Green Technologies R&D, Montegranaro (FM)
Systems	ISO 9001 · ISO 14001, ILC Certification
Core IP	TEAS process for the molecular treatment of water, patent filed by Think Green Technologies S.A.

The partner's foundational premise concerns the physical state of water itself. Beyond the three familiar phases, gaseous, liquid and solid, the experimental work of Gerald Pollack described a fourth, structured phase, the so-called exclusion zone, in which water adjacent to a surface becomes negatively charged and behaves, in its capacity to hold charge and to conduct, in a manner comparable to a battery.

From that premise the partner developed **TEAS**, a process by which water is modified into a technical liquid. A TEAS process machine applies a combination of harmonic waves, electrolysis and controlled frequencies to alter the molecular arrangement of water, orienting each molecule according to the property required of the resulting liquid.

The significance of TEAS is that it is a platform rather than a product: the same process machine, differently parameterised, yields liquids with different engineered properties: lubricating and cooling, dielectric, thermo-radiating, fertilising, purifying.

Division of roles. The partner owns the process and its intellectual property. The Centre owns the engineering: the rigs on which a process is realised, the instrumentation that measures it, the control systems that make it repeatable, and the documentation that makes it transferable. Neither role substitutes for the other, and both are named in every dossier issued from this site.

Independent verification. Because the Centre's status is strategic-independent, its measurements are its own. Where its results confirm a partner's claim they are published as confirmation; where they do not, the discrepancy is recorded and investigated.

17 · MISSION AND RESEARCH

Application families of the TEAS platform

The technology families below, and the market assessments accompanying them, are those set out by the technical partner in its own published company profile, and are reproduced here as the research context within which the Centre operates.

SECTOR	TECHNOLOGY	DESCRIPTION	MARKET
Mechanical	LL.R. lubricant and coolant	Fully inorganic coolant, free of emulsifiable oils, minimising bacterial growth. Non-toxic, low oxidative potential, non-polluting and easily disposable; suited to intensive machining with cutting tools.	€ 85 B
Batteries	Ecological dielectric liquid	Process machine producing a dielectric replacement for acid in new-generation lead-acid batteries, easing reuse and disposal without generating excessive environmental problems.	€ 100 B
Thermotechnics	L.T.R. thermo-radiating liquid	High-conductivity, low-oxidation compound for closed-loop radiant systems, with savings of the order of thirty per cent against current systems. Non-toxic and non-flammable.	€ 85 B
Refrigeration	Closed-circuit process liquids	Liquids for closed circuits in place of the evaporating gases still used in climate systems, refrigerators, inverters and heat pumps; harmless and substantially less hazardous.	€ 400 M
Cosmetics	TEAS treatment of thermal waters	Treatment of thermal waters to exploit natural benefits enhanced by molecular correction; emulsion and sampling of plant extracts or specific active ingredients for health treatments.	€ 130 B
Agriculture	Fertiliser and pest-control liquids	Liquids for fertilising and pest-control use, non-polluting and free of toxic residues, capable of being introduced safely into the animal and human food chain.	€ 100 B
Water & waste	Purification and treatment systems	Treatment and purification of water contaminated by pathogenic bacteria and organic waste; descaling, germicidal and bactericidal systems, configured for each sector and type.	€ 165-225 B
Transport	Marine propulsion	A vessel drawing water from the sea, treating it and obtaining the gas that powers its engine: a zero-impact vessel with unlimited navigation capacity.	€ 500 B
Medical	TRIOXI gas	Gas with anti-inflammatory properties at muscular level, under study for effects on cellular rejuvenation and slowing.	€ 16 B IT / 200 B
Fuel	T.O.G. new ecological fuel	An environmentally clean fuel whose diffusion would reduce carbon emissions and the associated public-health costs, with consequences for energy geopolitics and resource distribution.	over € 1,000 B
Energy	HG4HOME technology	Transformation of the technical liquid into a gas capable of powering a generator and producing electricity: the first station for energy independence.	.
Economy	TGT Crypto energy bank	A stable unit of account based on the countervalue of carbon credits generated by the absence of CO ₂ production, coupling energy independence with a guaranteed currency.	not quantified

Market values are those stated by the technical partner and are presented as its own assessment of the addressable sectors, not as a forecast of the Centre's activity. The Centre's contribution is engineering: taking a process family from laboratory demonstration to an instrumented, reproducible and documented unit.

Not every family stands at the same stage. Some exist as characterised liquids with measured properties, others as complete running units, others again as research directions with defined next experiments. The Centre publishes the stage of each programme in its technical reporting.

18 · MISSION AND RESEARCH

HG4HOME: architecture of the demonstrator

The model was built to demonstrate that the system can generate electricity from water while completely disconnected from the grid: the first station for energy independence.

#	BLOCK	WHAT IT DOES
01	TEAS module unit	Transformation of water into technical liquid. A complex system of harmonic waves, electrolysis and frequencies changes the molecular pattern of the water, orienting each molecule so as to favour the liquid-to-gas transformation that occurs in the following blocks. Declared 100% operative.
02	Block 1: liquid to gas, with control	Transformation of the technical liquid into a gas of explosive power, conveyed into an Otto-cycle engine in order to start it. This block houses the PLC and the control systems of the whole model. Declared 100% operative.
03	Block 2: additional gas capacity	A second transformation stage, added to produce the further quantity of gas required by the three generators operating together. Declared 100% operative.
04	Electricity generators	Three 5 kW petrol Otto-cycle generators, selected for the most advantageous consumption-to-production ratio, running on the gas produced by the machine in substitution for petrol. The manufacturer limits continuous operation of this generator type to four hours.
05	Inverter, storage and load block	Inverters, storage batteries and heating lamps. Current arriving from the generators is fed to the inverters, which transform it and direct it either to the batteries or to the lamps according to the configuration selected.

15 kW

PRODUCED, PROOF OF CONCEPT

~50%

SELF-CONSUMED

~50%

AVAILABLE AT OUTPUT

60%

TARGET ENGINE EFFICIENCY

Measured behaviour of the proof of concept. Under optimal conditions the unit built to date produces 15 kW, of which approximately one half is self-consumed to sustain its own operation and approximately one half remains available at output for the user. The instrumentation panel records production on each of the three lines together with self-consumption and residual instantaneous energy, each timestamped for the run.

The Centre's role. Montegranaro provides the engineering discipline around this architecture: rig construction, electrical and control design, instrumentation, recorded test campaigns, failure analysis, and the documentation required for independent verification. A demonstrator becomes an engineering result when a third party can reproduce it from the record.

New engine-generator. Design has begun on a purpose-built engine-generator for the definitive model, in place of the adapted petrol units. The engine starts from an efficiency of sixty per cent, and development is directed at raising that yield. The four-hour continuous operating limit of the present generators is a manufacturer constraint of the adapted hardware, not a property of the process.

Next steps. The programme now moves from demonstration toward an engineered product: a purpose-designed engine-generator, continuous rather than time-limited operation, an energy balance measured across a full duty cycle, and a build documented to a standard an industrial manufacturer can take into production.

PART FOUR · CENTRE THREE

Brindisi, Italy

The plant-engineering house of the Group

A 3,000 m² headquarters with a 1,600 m² Technology Research Lab in the Brindisi industrial zone, operated in strategic collaboration with Skem@ Srl: an engineering nucleus descended from the former Himont / Montell polyolefin engineering division, with fifteen-plus years of delivered basic and detail design in more than forty countries.



STATE-OF-THE-ART ENGINEERING FACILITY
in Brindisi, Italy



ISO 9001:2015
Quality Management System



ISO 45001:2018
Occupational Health and Safety



**ADVANCED TESTING AND
PROTOTYPING LABORATORY**



TECHNICAL HUB
for Global Energy Solutions

ENGINEERING EXCELLENCE



TESTING & PROTOTYPING LABORATORY

THE TECHNOLOGY RESEARCH LAB, BRINDISI ORIGINAL PHOTOGRAPH

IN THIS PART

19 The centre at a glance

21 The facility, the laboratory and the team

23 The delivered project registers

20 Skem@ Srl, the company behind the centre

22 Engineering capability and the IT platform

24 Leadership, HSEQ, R&D and sustainability

3,000 m²

HEADQUARTERS

1,600 m²

TECHNOLOGY RESEARCH LAB

25+

ENGINEERS & SPECIALISTS

40+

COUNTRIES DELIVERED

19 · THE CENTRE AT A GLANCE

The engineering centre is the whole argument

Everything claimed about delivery capability can be walked through, audited and verified at one address in Brindisi.

The Group's international engineering coordination centre for Europe and the Mediterranean: a 3,000 m² headquarters comprising a two-storey Engineering Center of 500 m² and an adjoining 1,600 m² Technology Research Lab, plus a 265 m² dedicated green-projects office in downtown Brindisi.

A working engineering house. The proof is not a single project promise: it is an operating, multi-disciplinary engineering centre with a decades-long delivery record. Brindisi is where plant, process, electrical, instrumentation and control engineering is performed, and where control-system and safety-system cabinets are assembled, instrumented and functionally tested inside the laboratory before they ship to site: a manufacturing-grade discipline that is rare in an engineering house of this size.

One centre, the full cycle. A team of 25+ specialists carries projects from feasibility and FEED through detail engineering, procurement support and commissioning, across Oil & Gas, Petrochemical and Power.

Certified, not just claimed. The company operates under ISO 9001 (Quality) and ISO 45001 (Occupational Health and Safety) management systems, with an uncompromising HSEQ culture and a sustainability agenda mapped to the UN Sustainable Development Goals.

Why this is decisive. Investors and partners can do three things in one visit: inspect the engineering offices and the test lab, review the audited systems, and walk the delivered project record for clients including LyondellBasell, Saipem, Eni, Techint, Enel and Engie.



THE BRINDISI CENTRE PROFILE

DESIGNED INFORMATION GRAPHIC

WHAT THE CENTRE DELIVERS

Three visible streams of work on one engineering platform: Oil & Gas (treatment, storage, offshore / FPSO, pipelines), Petrochemical (PP / PE / polyolefin plants, Spheripol and Spherizone), and Power and green energy (gas, biomass, solar, waste-to-energy, green hydrogen), all around the same multi-disciplinary, E&I-led core.

3,000	1,600	40+	15+
M ²	M ² RESEARCH	COUNTRIES	YEARS
HEADQUARTERS	LAB		CONTINUOUS DELIVERY

22 · ENGINEERING CAPABILITY

A multi-disciplinary engineering force

The capability that lets one centre take a project from feasibility to a commissioned, as-built plant.

The centre's defining asset is its people: a team of 25+ specialists spanning project management, process and technology, mechanical, civil / structural / HVAC, piping and layout, and electrical and instrumentation engineering. This breadth lets a single firm own the complete engineering value chain rather than outsourcing critical steps.

Disciplines under one roof. Process engineers select the process and develop PFDs and P&IDs; mechanical engineers handle equipment and packages; piping and civil / structural / HVAC engineers develop the plant; and the firm's signature electrical, instrumentation, control and safety-systems engineers, the polyolefin-rooted E&I core, tie it all together.

Audited, not asserted. ISO 9001:2015 (Quality) and ISO 45001 (Occupational Health and Safety) management systems, applied across plan-do-check-review on every project.

Why E&I is the differentiator. Electrical, instrumentation, control and safety systems are the disciplines that larger contractors most often subcontract, because they demand deep, current, plant-specific knowledge and carry the highest functional-safety exposure. A firm that holds them in-house, and functionally tests the cabinets it designs, can take prime responsibility where others cannot.

Why polyolefins is the second. Spheripol, Spherizone, Spherilene and Lupotech are licensed process technologies with a narrow pool of engineering houses able to work on them at basic-design level. The Brindisi nucleus came out of the division that helped create them, and has stayed inside that pool for more than fifteen years.

THE ENGINEERING STACK

FUNCTION	SCOPE
Project mgmt & controls	Project management, planning & control, document control
Process / technology	Technology & licence evaluation, simulation, PFD / P&ID
Mechanical	Equipment, packages, PV Elite, pipe stress (Caesar II)
Piping / layout	3D models, spooling, isometrics management
Civil / structural / HVAC	Structural design (Tekla, Mastersap), buildings, HVAC
Electrical & instrumentation	Single-line, load calculation, control & safety systems, telecom

THE SERVICE LADDER: FROM CONCEPT TO OPERATIONS

PHASE	SERVICES
Engineering, concept	Conceptual design, feasibility study, scope definition, estimating, technology / licence evaluation
Engineering, design	Basic engineering, Front-End Engineering Design (FEED), detail engineering design
EPCM & PMC	Project management, design engineering, procurement & construction support, commissioning & start-up
Operations & maintenance	Plant engineering, asset-performance improvement, maintenance & technical support, as-built services

COMPETENCIES



SPECIALIZATION IN E&I
Electrical, Instrumentation,
and Automation



**FOCUS ON COMPLEX
PETROCHEMICAL PROCESSES**



TECHNICAL STACK
EPLAN, SPM, AutoCAD



ADVANCED ENGINEERING
COMPETENCIES

SPECIALISATION IN E&I, COMPLEX PETROCHEMICAL PROCESSES, FULL LIFECYCLE MANAGEMENT · DESIGNED GRAPHIC

22 · THE IT PLATFORM AND THE SOFTWARE STACK

From feasibility to as-built, in-house

A complete engineering IT platform and an industrial-grade software stack underpin every deliverable.

3D CAD & MODELLING

Equipment, piping, structural, HVAC, electrical, instrumental, safety and architectural: AutoCAD, Bentley MicroStation, ESAPro, PDS, PDMS.

ANALYSIS & SIMULATION

Structural, pipe-stress (Caesar II), process simulation (Hysys), electrical load calculation: HTRI, PV Elite, ETAP, Tekla, Mastersap.

2D CAD & SCHEMATICS

Intelligent PFD and P&ID, single-line and hook-up drafting, loop drawings: EPLAN, SPM, SPAC, Zeus 2, JDCAV, AutoCAD.

ENGINEERING DATABASE

Pipe specification and MTO, line lists, equipment lists, E&I / F&G / telecom tagged items, weight management, cable lists.

In-house developed platforms. Beyond commercial tools, Skem@ runs proprietary systems: SKDMS (document management), GE.SO and H.R.M., alongside Microsoft Project and Primavera P6 for planning, and SharePoint for collaboration. Specialist tools include INtools, InstruCalc, Ampere, ATEX verification, Dialux and Simulare_20.

Why the platform matters commercially. Engineering deliverables on a plant of any size number in the thousands, and they are produced by different disciplines over several years. Without a controlled database and document-management layer, revision drift is inevitable and the cost of it lands during construction. The platform is what allows a 25-person firm to take prime engineering responsibility on plants worth hundreds of millions.

It is also what makes the record auditable. Every deliverable is produced under controlled document management, every project moves through plan-do-check-review, and every cabinet is functionally tested before dispatch. That is the difference between a management system as a badge and a management system as a delivery method.

THE MANAGEMENT SYSTEM AS A DELIVERY METHOD	
CYCLE STAGE	WHAT IT PRODUCES ON A PROJECT
Plan	Scope definition, execution plan, discipline man-hour budget, document register, controlled in SKDMS
Do	Deliverables produced against the register, revision-controlled and squad-checked
Check	Inter-discipline check, client comment resolution, functional test of cabinets
Review	Lessons learned, non-conformity and corrective action, close-out under ISO 9001

Global Vision & Innovation.

Advanced engineering solutions for sustainable energy.

Excellence in research and cutting-edge technologies.

23 · BUSINESS AREAS & SERVICES

What the centre does

Three business areas, served end-to-end from feasibility study to operations and maintenance.

OIL & GAS

Offshore and floaters (FPSO), gas compression and processing, tank farms and terminals, flare systems, refining, gas and oil treatment, pipelines.

PETROCHEMICAL

PP and PE plants, pelletizing, compounding, C4 isomerization, EPDM: deep polyolefin (Spheripol / Spherizone / Spherilene) know-how.

POWER & CONVENTIONAL

Simple- and combined-cycle gas, coal-fired, cogeneration, biomass, waste-to-energy, and nuclear power plant support.

GREEN ENERGY & OTHER

Solar PV and thermal, wind, green hydrogen, water and wastewater, desalination, plus pharmaceutical and steel.

WHERE THE SAME TEAM ADDS MOST VALUE

STRENGTH	WHAT IT COVERS	REFERENCE PROOF
Polyolefins (PP / PE)	Spheripol, Spherizone, Spherilene, Lupotech process plants	LyondellBasell: multiple BASIC / FEED lines, 200-600 KTA
Electrical & I&C	Single-line, control & safety systems, panel supply & test	Aereon / Ventspils VRU: supply of E-panels & safety systems
Offshore / FPSO	Topsides, chemical injection, living quarters, modifications	Petrobras FPSO Guanabara; Eni FPSO Firenze; Maersk Tyra
Gas & oil treatment	Dehydration, desalting, metering, pressure reduction, HIPPS	Petronas / TOC Garraf & Nasiriyah; Sirte Oil, Libya
LNG storage	FSRU & coastal LNG storage, Wobbe-index correction	Snam / Techint FSRU Ravenna; Venice LNG, Porto Marghera
Green hydrogen	Electrolyzers, PV coupling, high-pressure storage, blending	Engie Hydrogen Valley: 5 MW green H2, Italy



1. PETROCHEMICAL
Leadership in Spheripol/ Spherizone technologies.



2. OIL & GAS
Technical support for extraction and transport.



3. POWER GENERATION

GLOBAL PROJECT FOOTPRINT
IN OVER 40 COUNTRIES



GLOBAL CLIENTS

SECTORS AND GLOBAL REFERENCES

A GLOBAL PROJECT FOOTPRINT IN OVER 40 COUNTRIES · DESIGNED GRAPHIC

The real competitive position: a mid-sized, Brindisi-based engineering house holds genuine prime-engineering depth in polyolefins and E&I that far larger firms routinely subcontract. That specialised, audited capability, delivered for fifteen-plus years to the world's leading licensors and operators, is the centre's strategic asset.

23 · PROJECT REFERENCES

The Oil & Gas register

The delivered Oil & Gas record as recorded in the engineering reference volume: refining, gas treatment, storage, pipelines and offshore, from Italy to Iraq, Libya, Brazil and the North Sea.

CLIENT	SELECTED PROJECT REFERENCE	DATE	COUNTRY
MOH / KT / f.b.m.	New C3 Splitter Unit · Detail	2023-ongoing	Greece
Techint / Snam	FSRU Ravenna and connection to the national gas pipeline network · FEED	2022-ongoing	Italy
PEG / BP-ROO	Qarmat Ali water intake structure and 1st lift pump station replacement · Detail	2022	Iraq
Randridge / HES	HES Hartel Tank Terminal · Detail	2022	Netherlands
PEG / TOC	Gas dehydration and desalting unit, Nasiriya degassing station · Basic	2021	Iraq
PEG / SOC	Upgrade of let-down station for local market gas supply · Detail	2021	Libya
PEG / SCOP-Ruhrpumpen	Crude oil expansion project, pumping station · Consulting	2021	Iraq
PEG / Petronas-TOC	Gas dehydration plant and dry-gas pipeline, Garraf operation · Detail	2020-ongoing	Iraq
Techint / Venice LNG	Coastal LNG storage · FEED	2020	Italy
Expertise / RAM	New liquid-sulphur degassing system · Detail	2020	Italy
Basis Eng. / Maersk Olie OG Gas	Tyra Future: TEH offshore living quarter	2019-2020	North Sea
Basis Eng. / Petrobras	FPSO Guanabara MV31: chemical-injection package	2019-2020	Brazil
GSP / PES / Energian	Prinos project, Lambda platform · Detail	2019-2020	Greece
Garof / GALP Energia	Flare-gas recovery system · Detail	2018	Portugal
TAG Austria / Saipem - ILF	NOx emission reduction · Detail	2017-2018	Austria
Aereon / Ventspils	Vapour recovery units (VRU) · Detail and supply	2017	Latvia
Quant / Floaters (Eni)	Framework agreement, maintenance and modifications on FPSO Firenze · Service	2016-2017	Italy
Sices / Technimont - Total	Tempa Rossa oil-field development · Detail	2016	Italy
Saipem / Floaters (Eni)	Framework agreement, maintenance and modifications on FPSO Firenze · Service	2014-2015	Italy
Basis Eng. / Lotos Petrobaltic	Petrobaltic project · Detail	2014	Poland
Garof / Repsol	Flare-gas recovery system · Detail	2014	Spain
Basis Eng. / Lotos Petrobaltic	Petrobaltic project · FEED	2013	Poland
Basis Eng. / Foxtrot Int.	LDC Marlin development project · Consulting	2013	Ivory Coast
COSMI / Eni E&P	New knock-out drum and blower project, COVA · Detail	2012-2013	Italy
Technimont / Ecofuel	Revamping of MTBE / ETBE plant · Detail	2010-2011	Italy

Source: Skem@ Srl, Engineering References, Oil & Gas (2023). Services span electrical, instrumentation, control and safety systems, telecommunications, piping, civil engineering and 3D modelling.

23 · SELECTED PROJECT PROFILES, OIL & GAS

Four references in detail

None of these is a complete plant delivered turnkey; all of them are the electrical, instrumentation, control and safety scope inside someone else's plant, which is precisely the scope that decides whether an installation can be commissioned, started and operated safely.

FSRU RAVENNA AND THE NATIONAL GAS-GRID CONNECTION

- Client: Techint / Snam · LNG storage and distribution
- Period: 2022 to ongoing, Italy
- Scope: floating storage and regasification unit, storage capacity 170,000 m³; Wobbe-index correction unit
- Services: FEED, instrumentation & control, electrical

TYRA FUTURE: TEH OFFSHORE LIVING QUARTER

- Client: Basis Engineering / Maersk Olie OG Gas A/S
- Type: offshore accommodation module · 2019-2020, North Sea
- Scope: offshore living quarter of approximately 5,000 tonnes
- Services: electrical, instrumentation and control engineering

GAS DEHYDRATION PLANT AND DRY-GAS PIPELINE, GARRAF

- Client: PEG / Petronas – ThiQar Oil Company, Nasiriyah, Iraq
- Type: gas and oil treatment, transportation facilities · 2020 to ongoing
- Scope: gas dehydration plant; 20-inch, 76 km dry-gas export pipeline; two block-valve stations
- Services: detail engineering (I&C), procurement services and vendor follow-up

VAPOUR RECOVERY UNITS, VENTSPILS

- Client: Aereon / Ventspils · terminal emission control · 2017, Latvia
- Scope: vapour recovery units for a marine terminal
- Services: detail engineering and supply of electrical panels and safety systems, assembled and functionally tested in the Brindisi laboratory

THE SERVICE MIX ACROSS THE OIL & GAS RECORD

SERVICE	WHAT IT MEANS IN THE RECORD	WHERE IT APPEARS
Detail engineering	Construction-issue design of the electrical, instrumentation, control and safety scope, with as-built documentation	The largest single category in the register
FEED	Front-end definition fixing the technical basis and cost estimate before the investment decision	FSRU Ravenna · Venice LNG · Petrobaltic
Basic engineering	Process and system definition following technology selection	Nasiriya gas dehydration and desalting
Consulting	Specialist technical advice on defined questions, often on operating assets	Crude oil expansion pumping station · Marlin development
Supply	Manufacture, assembly and functional test of electrical panels and safety systems in the Brindisi laboratory	Ventspils vapour recovery units
Service frameworks	Standing maintenance and modification agreements on operating installations	FPSO Firenze, across two multi-year frameworks

23 · PROJECT REFERENCES

The polyolefin register

Basic design and FEED for licensed polyolefin process technology, delivered for LyondellBasell and Petronas across China, Malaysia, the Middle East, Central Asia and beyond.

CLIENT	SELECTED PROJECT REFERENCE	DATE	COUNTRY
LyondellBasell / Jinneng Chemical	450 KTA Spheripol PP plant (Qingdao) · Basic	2021–2022	China
ISS Int.–Startail / Ceyhan Polipropilen	Ceyhan PDH–PP plant · PMC	2019–2020	Türkiye
LyondellBasell / Shandong Chambroad	PP 200 KTA Spherizone + PP 400 KTA Spheripol · Basic	2019–2020	China
LyondellBasell / Shandong Yuhuang	PP 450 KTA Spherizone + LLDPE/HDPE 450 KTA Spherilene · Basic	2018	China
LyondellBasell / Fujian ZongJing	2 × Spheripol PP 600 KTA · Basic	2018	China
PIDID Co.	PP relocation project · Basic	2017–2018	Iran
LyondellBasell / Yanchang Petroleum	PP3 plant: Spherizone PP 400 KTA · Basic	2017–2018	China
SINA Chemical Industry Development	Master plan for polyolefin complex, Chabahar · Feasibility	2016	Iran
LyondellBasell / Petronas	RAPID project: HDPE 400 KTA · FEED	2015–2016	Malaysia
LyondellBasell GmbH	Handling and storage facilities · Feasibility / Basic / Detail	2015	Germany
LyondellBasell / Orpic	LIWA Plastics project: Spheripol PP 300 KTA · Basic	2014	Oman
LyondellBasell / Petronas	RAPID project: 2 PP lines, 450 KTA · FEED	2014–2015	Malaysia
LyondellBasell / Petronas	RAPID project: 2 PP lines, 300 KTA · FEED	2012–2013	Malaysia
LyondellBasell	PP 450 KTA Spherizone + LLDPE/HDPE 450 KTA Spherilene · Basic	2011	USA
LyondellBasell / MPC, BNPC, DPC	DENA project: 3 × HDPE 300 KTA · Basic	2010	Iran
LyondellBasell / KPI	PP 500 KTA Spherizone, LLDPE/HDPE 400 KTA Spherilene, LDPE 400 KTA Lupotech T · FEED	2008–2009	Kazakhstan
LyondellBasell / NGC, NEC	Master plan for polyolefin complex · Feasibility	2008	Trinidad & Tobago
Basell / IOCL	2 PP lines, 340 KTA each · Basic	2007	India

Source: Skem@ Srl, Engineering References, Petrochemical (2023). Spheripol, Spherizone, Spherilene and Lupotech T are licensed polyolefin process technologies.

READING THE POLYOLEFIN RECORD

Two things stand out. The first is the recurrence of a single client relationship, LyondellBasell, across more than fifteen years and four continents: the strongest available evidence of engineering trust in a licensed–technology environment. The second is the phase: Basic and FEED rather than construction support. Those are the phases in which process know-how, not drafting capacity, is what the client is buying.

23 · PROJECT REFERENCES

Plant engineering and the power register

Revamping, debottlenecking and technical support on operating petrochemical installations, and a power portfolio from green hydrogen and fusion to biomass, solar and waste-to-energy.

PETROCHEMICAL PLANT ENGINEERING

CLIENT	SELECTED PROJECT REFERENCE	DATE	COUNTRY
Startail / HELPE	PP upgrade project · Detail	2023-ongoing	Greece
ILF / OT Industries / Slovnaft	Ethylene storage tank (EST) project · Consultancy	2021-2022	Slovakia
LyondellBasell Italy	Technical support to new investments · Consultancy	2021-ongoing	Italy
Chemgas	Revamping of industrial and medical gas generation plant · Consultancy	2021-2022	Italy
Techint / Versalis	Dismantling and relocation of MT compressors · Detail	2020	Italy
LyondellBasell Chemie BV	C4 isomerization debottlenecking · Detail	2014-2015	Netherlands
LyondellBasell Italy	New ground flare · Detail	2012-2015	Italy
LyondellBasell GmbH	FGV2 capacity increase, flare-gas recovery · Detail	2013-2014	Germany
LyondellBasell Italy	P9T (PP) revamping · Detail	2010-2011	Italy
LyondellBasell GmbH	Swing plant: 400 KTA LLDPE-HDPE · Detail	2007-2008	Germany

POWER & GREEN ENERGY (SELECTED)

CLIENT	SELECTED PROJECT REFERENCE	DATE	COUNTRY
Engie	Hydrogen Valley: 5 MW of green hydrogen · Basic	2022-2023	Italy
CestaroRossi / ITER Consortium	ITER Tokamak project: 500 MW of fusion power · Consultancy	2020	France
Non-disclosable client	Energy efficiency: 4 MWp PV plant + 2 × 2.7 MWe trigeneration · Feasibility	2020	Italy
Sylhet City Corporation	5.2 MWe waste-to-energy power plant · Feasibility	2020	Bangladesh
Slovenské Elektrárne	Nuclear power plant · Consulting	2013-2020	Slovakia
Enel Si.	5 × 999 kWe biomass power plant · Feasibility + Basic	2015	Italy
LyondellBasell	Steam boilers project: 120 t/h steam at 64 barg, 470°C · PMC	2013-2015	Netherlands
Teknosolar Italia	50 MW thermal-solar power plant · Consulting	2012-2013	Italy
Enel	CO2 capture system modification · Detail	2012	Italy
Techint / Solar XXI	Thermal-solar power pilot plant · Basic	2011	Italy
Comes / Termomeccanica - Acea	Waste-to-energy power plant · Detail	2010	Italy
Enel	DeSOx new control room · Detail; thermal plant structural integrity · Consulting	2009	Italy
Itea (Sofinter)	ISOTHERM Pwr pilot plant, waste-to-energy, reverse engineering · Detail	2006	Italy
CCT Marcegaglia / C.P.C.U.	Auxiliary boilers for steam production: 88.8 MWt, 123 t/h, 20 barg, 235°C · Detail	2005	France

Source: Skem@ Srl, Engineering References, Petrochemical and Power (2023). The power portfolio is increasingly weighted toward green hydrogen and energy efficiency.

24 · THE PEOPLE WHO RUN THE CENTRE

Sandro Nasta, General Director

A founder-level engineer at the head of the engineering area and of the technology research laboratory.



**SANDRO NASTA, GENERAL
DIRECTOR OF THE CENTRE**

ORIGINAL
DOCUMENTATION

Role	General Director of the centre · Managing Director, Skem@ Srl
Leadership	Executive Manager of the Engineering Area; Director of the Technology Research Laboratory
Specialisation	Electrical, instrumentation & automation (E&I) engineering
Expertise	Deep polyolefin heritage: former Himont / Montell / Basell
Sectors	Oil & Gas, Petrochemical and Power infrastructure

Why the leadership profile matters. In a licensed-technology environment, engineering trust is personal before it is corporate. Licensors and operators award basic design and FEED to firms whose named engineers they know. The Brindisi centre is led by an engineer whose specialisation, electrical, instrumentation and automation, is precisely the discipline the firm is retained for, and whose polyolefin heritage runs directly back to the division that developed the process technologies the firm still engineers today.

The same person directs the Technology Research Laboratory, which is what keeps the design office and the build-and-test floor from drifting apart. A cabinet designed on one side of the site is assembled and functionally tested on the other, under one technical authority.

The four declared commitments: quality and reliability, commitment to excellence in every project; technical expertise, proven know-how and industry experience; innovation, driving technology forward for a better future; sustainability, engineering solutions for a sustainable world.

1 · THE PROOF LAYER

A fifteen-plus-year record of delivered projects for the world's leading licensors and operators. A working engineering house with an audited delivery record is believed permanently.

2 · THE ENGINEERING ENGINE

The polyolefin process know-how and the E&I / control-systems backbone originate here: what makes the offering prime engineering rather than commodity drafting.

3 · THE MEDITERRANEAN BRIDGE

Brindisi's Adriatic position places the centre at the crossing of the European, North-African and Middle-Eastern energy markets: the natural engineering bridge for the Group's regional programmes.

WHAT BRINDISI CONTRIBUTES TO EACH GROUP PROGRAMME

GROUP PROGRAMME	THE BRINDISI CONTRIBUTION	DISCIPLINE DRAWN ON
Advanced Geothermal Systems	Surface-plant engineering around the ORC module: well-head interface, thermal circuits, electrical distribution, grid connection, control and safety systems	Process · piping · E&I · civil
Industrial waste-heat recovery	Integration of the ORC unit into an existing plant: tie-ins, heat-source conditioning, permits-to-work interface, as-built documentation	Process · mechanical · E&I
Green hydrogen	Electrolyser plant engineering, photovoltaic coupling, high-pressure storage and grid blending, delivered at basic-design level for a 5 MW installation	Process · electrical · safety systems
Data-centre energy recovery	Facility engineering and the thermal interface between server cooling loops and the low-temperature conversion module	HVAC · mechanical · E&I
Industrial decarbonisation	CO ₂ -capture modifications, vapour and flare-gas recovery, efficiency retrofits on operating plant	Process · mechanical · controls

Held to standard, and heading green

An ISO-certified management system, an uncompromising safety culture, a research footprint with universities and research centres, and a transition portfolio already delivered as equipment.

STANDARD / ASSET	SCOPE
ISO 9001	Quality Management System: engineering & consultancy for energy projects
ISO 45001	Occupational Health & Safety management
HSEQ policy	Continuous improvement; environmental protection; employee wellbeing
Ethics	Uncompromising ethics policy across all engagements
Research partners	Università del Salento · Dyrecta Lab · CETMA (European Research Centre for Technologies, Design and Materials)
Green-projects office	Dedicated downtown facility for H2, solar & efficiency

WHY ISO 45001 AND NOT ONLY ISO 9001

The centre's engineers work on live refineries, petrochemical complexes and offshore installations. Occupational health and safety is not an administrative overlay in those environments: it is the condition of access. ISO 45001 is what an operator asks for before an engineer is allowed on site.

SUSTAINABILITY & THE GLOBAL GOALS

The centre's work is mapped to the UN Sustainable Development Goals: SDG 7 (green hydrogen, solar, biomass, efficiency), SDG 9 (plant, process and E&I engineering across three continents), SDG 12 (waste-to-energy, flare-gas and vapour recovery, CO2 capture), SDG 13 (the green-projects office and the Technology Research Lab), together with SDG 6, 8 and 17 across water treatment, skilled employment in Puglia and research partnerships.

R&D: REGISTERED INNOVATION AND PROJECT PORTFOLIO		
INNOVATION	WHAT IT IS	APPLICATION
IWEms	A patented alternative method of producing energy from wind by exploiting aero-elastic phenomena	Distributed micro wind generation
Trinity VTOL UAV	An industrial-grade vertical take-off and landing fixed-wing unmanned aerial vehicle	Power-line inspection, PV thermal monitoring, pipeline hazard identification
AEREL	An energy router entrusting the management of energy flows to artificial intelligence within a micro-grid	Energy efficiency in complex buildings and industrial sites
Alkaline electrolyser	A low-temperature, high-pressure alkaline electrolyser powered solely by renewable energy, containerised	Green hydrogen production, scalable and versatile
DownTown-Mobi	A vehicle-to-grid energy balancing module, prototyped with four research centres and private companies	Sustainable urban mobility

THE TRANSITION RECORD, DELIVERED AS EQUIPMENT		
TRANSITION CAPABILITY	DELIVERED REFERENCE	YEAR
Green hydrogen: 5 MW electrolyser, 7 MWp PV, 250 bar storage	Engie Hydrogen Valley · Basic, Italy	2022-2023
Biomass power: 5 × 999 kWe plant	Enel · feasibility and basic, Italy	2015
Thermal solar: 50 MW plant	Teknosolar Italia · consulting, Italy	2012-2013
CO2 capture: system modification	Enel · detail engineering, Italy	2012
Waste-to-energy: 5.2 MWe plant	Sylhet City Corporation · feasibility, Bangladesh	2020

24 · WORLDWIDE FOOTPRINT & CUSTOMERS

A global delivery record

Projects delivered across more than forty countries for the world's leading licensors, operators and EPC contractors.

From a single Brindisi base, the centre has delivered engineering in over forty countries across five continents. The centre does not open local offices. It is engaged as the specialist engineering partner inside the structures of larger contractors and licensors, and it delivers from Brindisi under a controlled document and project platform, which is what makes the geography a matter of coordination rather than of establishment.

The consequence is that the same named engineers work on a polyolefin plant in China and a gas treatment facility in Iraq. Continuity of personnel across a fifteen-year record is the reason licensors return, and it is only possible because the delivery is centralised rather than dispersed.

COUNTRIES WITH DELIVERED PROJECTS

Austria · Bangladesh · Brazil · Canada · China · Congo (DRC) · France · Germany · Greece · Guyana · Hungary · India · Iran · Iraq · Italy · Ivory Coast · Kazakhstan · Korea · Latvia · Libya · Malaysia · Mexico · Netherlands · Oman · Poland · Russia · Saudi Arabia · Singapore · Slovakia · Spain · Thailand · Türkiye · Turkmenistan · UAE · USA

THE CLIENT BASE, BY CLASS

CLASS	NAMES	THE RELATIONSHIP
Technology licensors	LyondellBasell · Basell	Basic design and FEED on licensed polyolefin technology: the deepest and longest-running relationship in the record
Oil and gas operators	Eni · Petronas · BP / ROO · Petrobras · Maersk Oil · Energean · Sirte Oil · ThiQar Oil Company	Detail and front-end engineering on treatment, storage, offshore and pipeline facilities
Utilities and power	Enel · Engie · Edison · Acea · Slovenské Elektrárne	Feasibility, basic and detail engineering across conventional, renewable and nuclear generation
EPC and technology	Tecnimont · Techint · Saipem · Honeywell · Wood · ABB · ICA Fluor · Flowserve · Cameron · Arkad · Proger · Rönesans · PEG · Aereon · Garo · SIAD	The centre works as the specialist engineering partner inside larger contracting structures
Industrial & infrastructure	Sanofi · Snam · Motor Oil Hellas · Versalis · Chemgas · Marcegaglia	Plant engineering, revamping, debottlenecking and technical support

IN SUMMARY: WHAT BRINDISI IS

WHAT	THE FACT	THE EVIDENCE
The facility	3,000 m² HQ + 1,600 m² lab	Engineering Center + Technology Research Lab
The people	25+ specialists, led by S. Nasta	In-house design-build-test
The capability	Oil & Gas · Petrochemical · Power	Polyolefin & E&I core
The proof	ISO 9001 · ISO 45001 · 40+ countries	15+ years delivered record
The future	Green hydrogen & solar pivot	Engie 5 MW H2; R&D partners

40+

COUNTRIES SERVED

5

CONTINENTS

15+

YEARS CONTINUOUS DELIVERY

3

CORE SECTORS

PART FIVE · CENTRE FOUR

New Cairo, Egypt

The assurance and transition hub of the Group

A two-branch engineering and sustainability centre exceeding 500 m² in the 1st Settlement of New Cairo, operated in technical partnership with Yellow Helmet Egypt: 45 consultants and engineers, more than 350 combined professional years, an EGPC- and EGAS-approved training capability, and, since 2026, a formal institutional accreditation in the Arab Republic of Egypt.



ENGINEERING CENTER EGYPT: BUILDING TOMORROW, RESPONSIBLY

DESIGNED INFORMATION GRAPHIC

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- 28 The platform, the ecosystems and the AI stack
- 29 Certifications, credentials and track record

500+ m²

TWO-BRANCH HUB

45

CONSULTANTS & ENGINEERS

15K+

PROFESSIONALS TRAINED

70+

MAJOR PROJECTS

25 · THE CENTRE AT A GLANCE

The floor is the proof

Everything claimed can be walked, audited and verified at one address in New Cairo.

The Group’s principal engineering and sustainability hub for Egypt and the MENA region: a two-branch operation exceeding 500 m², with 30+ HSSEQ consultants and 15 specialist engineers, a combined professional experience of more than 350 years, an EGPC- and EGAS-approved training capability, and an institutional certification stack.

One structure, the full cycle. A team of 45 carries a mandate from gap analysis to implementation. The same centre has trained more than 15,000 professionals and delivered over 900 services to major industrial and energy clients.

Certified, not just declared. The centre operates under ISO 9001, ISO 14001, ISO 45001 and ISO 27001, alongside ATEX, IECEx, UL, FM and IADC standards, and an EGPC- and EGAS-approved training capability.

And, since 2026, institutionally recognised. During 2026 the centre obtained a formal registration within the system of companies cooperating with the activities of the National Organization for Military Production, together with a university research partnership and the commercial support of the Egyptian diplomatic mission in Washington D.C. Part Six of this dossier sets those out in full.



THE CONSOLIDATED INSTITUTIONAL PROFILE

DESIGNED INFORMATION GRAPHIC

WHAT NEW CAIRO ACTUALLY IS

A fully operational engineering and sustainability centre: a 500+ m² two-branch hub, a team of 45 consultants and engineers, deliver-audit-train in-house and a live client portfolio, operating under ISO 9001 / 14001 / 45001 / 27001 and co-branded as the R. Rockefeller S.C. Engineering & Sustainability Center, Egypt: the Group’s coordination centre for Africa and the wider MENA region.

THE PARTNERSHIP

The centre operates under the technical partnership between Yellow Helmet Egypt, the operating company, and The Rob Rockefeller Standard Carbon LLC, which holds the global brand and the strategic-sector mandate.

DELIVER

Gap analysis, international audits, management-system design and on-site mobilisation: the practice arrives with a method, not a proposal.

AUDIT

Independent assessment against ISO 9001, 14001, 45001 and 27001, plus ATEX, IECEx, UL, FM and IADC where the operation requires it.

TRAIN

EGPC- and EGAS-approved technical and safety certification of the workforce that will operate the asset: more than 15,000 professionals to date.

500+	45	15K+	900+	70+
M² TWO-BRANCH HUB	CONSULTANTS & ENGINEERS	PROFESSIONALS TRAINED	SERVICES DELIVERED	MAJOR PROJECTS

26 · THE COMPANY BEHIND THE CENTRE

Yellow Helmet Egypt: the operating house

An Egyptian HSSEQ, sustainability and engineering company, and the partnership that takes it global.

Yellow Helmet Egypt is a duly registered Egyptian company specialised in consultation, training, HSSEQ (health, safety, security, environment and quality), sustainability and general supply services, headquartered in the 1st Settlement of New Cairo.

A multidisciplinary house. The company is built around a team of approximately 30 HSSEQ consultants with a combined professional experience exceeding 350 years across management systems, auditing, operational excellence and industrial risk management, supported by a dedicated team of 15 expert engineers in decarbonisation, ESG, energy efficiency, geothermal and renewable energy, and climate-transition compliance.

Registered and credentialled. The company operates under Commercial Registration No. CR 100544 and Tax Identification No. 535910339, and holds an extensive credentials portfolio: ISO management systems, NEBOSH, IOSH, IRCA and IEMA professional accreditations, and registrations with Egyptian authorities including GAFI and the relevant chambers.

Two branches, one platform. Yellow Helmet Egypt operates through two branches with an overall operational office space exceeding 500 m², enabling project execution, training delivery, technical consultations and client support across Egypt and the wider MENA region.

AT A GLANCE

Operating company	Yellow Helmet Egypt (New Cairo)
Sector	HSSEQ, sustainability, decarbonisation & engineering
Commercial Reg.	CR 100544
Tax ID	535910339
Team	30+ HSSEQ consultants · 15 specialist engineers
Combined experience	350+ professional years
Premises	Two branches · 500+ m² · 1st Settlement, New Cairo
General Director	Dr. Yahia Zakaria Aly Moustafa
Partnership ref.	RRSC-YHE-EGY-2026-001

OWNERSHIP AND PARTNERSHIP

Yellow Helmet Egypt is the operating company and holder of the local credentials portfolio. The Rob Rockefeller Standard Carbon LLC holds the global brand and the strategic-sector mandate through a co-branded strategic partnership. Yellow Helmet Egypt retains its independent activity; RRSC is the institutional vehicle for sovereign and international engagements.

THE REGISTERED SCOPE OF ACTIVITY

DECLARED ACTIVITY	WHAT IT COVERS IN PRACTICE	WHO IT IS DELIVERED TO
Consultation	HSSEQ management-system design, gap analysis, international audit, risk and compliance advisory, ESG and carbon strategy	Industrial operators, energy companies, government bodies
Training	EGPC- and EGAS-approved technical and safety certification, Control-of-Work and behaviour-based safety programmes, contractor-crew certification	National energy sector, contractors, industrial workforces
Maintenance	Technical operational support, smart-maintenance optimisation, asset-performance and reliability programmes	Asset-intensive industry
General supply	Supply of technical equipment and materials in support of engineering, safety and monitoring mandates	Industrial and institutional clients

The four categories above are not marketing headings: they are the activities recorded on the company's Egyptian commercial registration, and they are the same four recorded on the 2026 registration card reproduced in Part Six of this dossier. What the company says it does, what its register says it does, and what its national accreditation says it does are the same list.

27 · THE STRUCTURE, IN DETAIL

A 500+ m² two-branch hub in New Cairo

Training rooms, consulting and audit offices, the AI-monitoring room and the staging areas for field mobilisation: the physical heart of the partnership.



- Sustainable systems and energy transition leadership
- Regional operational hub with global standards

OUR NUMBERS

15K+

Trained Professionals

900+

Services Delivered

70+

Projects Executed

GLOBAL CERTIFICATIONS & STANDARDS

ISO 9001

ISO 14001

ISO 45001

ISO 27001

Ex ATEX

IECEx

THE CENTRE PREMISES AND DELIVERY FLOOR

ORIGINAL DOCUMENTATION

New Cairo's 1st Settlement is one of Egypt's principal corporate and institutional districts. The centre occupies a two-branch operation exceeding 500 m² that houses the training rooms, the consulting and audit offices, the AI-monitoring room and the staging areas for field mobilisation.

Where it is. Building 2, Group 10009, 10th Neighborhood, 1st Settlement, New Cairo, Arab Republic of Egypt, with a second operational branch in the same metropolitan area.

Designed as a deliver-audit-train site. Unlike a pure sales office, the centre integrates the full professional cycle under one identity: gap analysis and international audits, Control of Work (permit-to-work) implementation, behaviour-based safety programmes, integrated ISO management frameworks, and a fully equipped training facility where the workforce is certified before deployment.

Instrumented from day one. The centre pairs human expertise with an AI and digital-transformation capability: AI-driven monitoring and predictive analytics, digital-twin and simulation, smart-maintenance optimisation and integrated dashboards with live KPI tracking, so that field performance is continuously validated against real operational data.



INSTRUCTOR-LED HSSEQ AND CONTROL-OF-WORK TRAINING AT THE CENTRE

ORIGINAL PHOTOGRAPH

WHAT THE CENTRE DELIVERS

Three service families on one platform: HSSEQ & operational safety (training, auditing, permit-to-work, behaviour-based safety), AI & digital transformation (monitoring, digital twins, KPI dashboards) and decarbonisation & sustainability (ESG, carbon management, geothermal and renewable energy), all delivered from the same New Cairo hub.

DELIVER-AUDIT-TRAIN: THE IN-HOUSE FLOW

PHASE	WHAT HAPPENS
1 · Gap analysis	Baseline audit against international standards
2 · Design	Management system, permit-to-work and behaviour-based safety framework
3 · Implementation	On-site mobilisation and integration
4 · Training	EGPC / EGAS-approved certification of the workforce
5 · Monitoring	AI dashboards and KPI tracking, continuously validated against field data

27 · THE CAPABILITY AND THE PEOPLE

A 45-strong multidisciplinary force

The capability that lets one centre carry a mandate from gap analysis to a certified, implemented system.

EIGHT DISCIPLINES UNDER ONE ROOF

DISCIPLINE	SCOPE ON THE FLOOR
HSSEQ management	ISO management systems, auditing, gap analysis, compliance
Operational safety	Control of Work (PTW), behaviour-based safety, contractor culture
Decarbonisation	Emissions reduction, carbon footprint, abatement strategy
Sustainability / ESG	ESG implementation, sustainability strategy & reporting
Energy efficiency	Energy management, efficiency & carbon-management programmes
Geothermal / renewable	Advanced Geothermal Systems & renewable energy solutions
AI / digital	AI monitoring, predictive analytics, digital twins, KPI tracking
Training & workforce	EGPC / EGAS-approved technical & safety training, certification

THE CREDENTIALS MOAT

Because the methodology, the training curricula and the audit frameworks are all held in-house, the team can scope a mandate, deliver the work and certify the result without external dependencies. The formally registered core includes ISO 9001, 14001, 45001 and 27001 management systems, with ISO 14064 (GHG) and ISO 50001 (Energy) within the portfolio; NEBOSH, IOSH, IRCA and IEMA professional accreditations; ATEX, IECEx, UL, FM and IADC standards; the EGPC- and EGAS-approved training capability; and GAFI and chamber registrations. Under Article 9 of the partnership agreement, each party grants the other a non-exclusive, royalty-free, worldwide licence to use and rely upon its credentials portfolio for institutional, tender and qualification purposes, while full ownership remains with the holder.



STRATEGIC LEADERSHIP: DR. YAHIA ZAKARIA
ALY MOUSTAFA

ORIGINAL
DOCUMENTATION

General Director. Dr. Yahia Zakaria Aly Moustafa, founder and Managing Director of Yellow Helmet Egypt, appointed General Director of the R. Rockefeller S.C. Engineering & Sustainability Center, Egypt. An HSE consultant by profession, he leads a multidisciplinary team of 30+ HSSEQ consultants whose combined professional experience exceeds 350 years.

As General Director he represents the centre in its institutional relations with the Group, public authorities and clients, ensures technical and quality oversight of all mandates delivered under the RRSC brand, and safeguards the brand integrity and the proprietary information of the Group.

Professional standing. Accreditations across IOSH, BOHS, NEBOSH-IGC and IRCA lead-auditor qualification. He is also the named chairman and responsible manager on the Egyptian corporate and authority registrations recorded in Part Six of this dossier.

28 · THE PLATFORM DELIVERED HERE

Sustainable industrial transformation

One integrated platform that moves industrial clients from reactive safety to zero-incident, sustainable systems.



From reactive safety to zero-incident. The core HSSEQ offering moves clients from reactive safety to zero-incident systems through gap analysis and international audits, Control-of-Work implementation, behaviour-based safety, contractor-safety culture and integrated ISO management frameworks. The benefits are operational: a zero-incident culture, operational excellence, regulatory compliance, reduced downtime and sustainable growth.

The decarbonisation and energy practice covers emissions reduction, sustainability and ESG implementation, energy efficiency and carbon management, geothermal and renewable energy, and climate-transition compliance: the strategic-sector capability that connects the centre to the Group's global energy mandate and, specifically, to the Advanced Geothermal Systems programme developed at Bursa.

THE FOUR CAPABILITY PILLARS

PILLAR	WHAT IT COVERS
Training & workforce development	From reactive safety to zero-incident systems · gap analysis & international audits · Control of Work (PTW) implementation · BBS & contractor-safety culture · integrated ISO frameworks
The Round Room	Multi-client collaboration & knowledge sharing · real-time problem solving and decision making · cross-industry expertise & benchmarking · strategic planning and innovation
AI & digital transformation	AI-driven monitoring & predictive analytics · digital twin and simulation · smart-maintenance optimisation · integrated dashboards and KPI tracking
Decarbonisation & sustainability leadership	ESG & contractor-safety culture · geothermal energy development · Advanced Geothermal Systems & sustainable energy solutions · sustainability strategies and reporting

HOW THE FOUR PILLARS INTERLOCK ON A SINGLE MANDATE

SEQUENCE	PILLAR ENGAGED	WHAT IS PRODUCED
1	Training & workforce development	A baseline gap analysis against international standards, and the design of the management system, permit-to-work framework and behaviour-based safety programme
2	The Round Room	Multi-client benchmarking and real-time problem solving: the mandate is designed against what has worked on comparable sites, not from first principles
3	AI & digital transformation	Monitoring, predictive analytics and dashboards instrumented against the system just implemented, so performance is measured rather than asserted
4	Decarbonisation & sustainability	Carbon assessment, ESG implementation and reporting built on the operating data the monitoring layer is already producing

28 · THE SEVEN SERVICE ECOSYSTEMS AND THE AI STACK

The full operational footprint

An integrated HSSEQ, industrial operations, digital transformation and AI monitoring partner, organised into seven complementary ecosystems.

#	SERVICE ECOSYSTEM	WHAT IT DELIVERS
01	HSSEQ & operational excellence	Management systems, gap analysis, international audit, Control of Work, behaviour-based safety, contractor-safety culture
02	Training & workforce development	EGPC- and EGAS-approved technical and safety certification, crew competence programmes, 15,000+ professionals trained
03	Integrated management systems & ISO	Design and implementation of ISO 9001, 14001, 45001 and 27001 frameworks, and preparation for external certification
04	Environmental & sustainability services	Environmental and social impact assessment, environmental monitoring, decarbonisation planning, ISO 14001 audit
05	Fire safety, security & risk systems	Fire-safety engineering, security systems and industrial risk management for high-hazard environments
06	Digital transformation & smart industry	Digitalisation of industrial operations, smart-maintenance optimisation, integrated dashboards and KPI tracking
07	AI monitoring & intelligent industrial systems	The flagship ecosystem, set out alongside

WHY SEVEN AND NOT ONE

Industrial clients do not buy safety, training, certification, environment and digital systems from a single supplier for convenience. They do it because the findings of an audit only become an outcome if the same organisation can design the system, certify the crew, and then measure whether it is working. Each ecosystem feeds the next, and all seven operate under the same audited management systems and the same industrial standards framework: ATEX, IECEx, UL, FM and IADC.

THE FLAGSHIP: AI MONITORING AND INTELLIGENT INDUSTRIAL SYSTEMS

- **PPE compliance:** automatic verification of personal protective equipment through the client’s existing CCTV estate, without new camera infrastructure.
- **Real-time event detection:** fire, smoke, fall, intrusion and unsafe-behaviour detection on live video.
- **Vision AI and VLM analytics:** vision and vision-language models, with edge deployment and robotics integration for environments where latency or connectivity rules out cloud inference.
- **Operational intelligence:** centralised dashboards, alerts, reports and KPI tracking, so that field performance is continuously validated against real operational data.

WHY “ON EXISTING CCTV” MATTERS

The single largest barrier to industrial computer vision is capital cost: a new camera estate across a refinery or a steel plant is a project in itself. Running the models against cameras that are already installed and already cabled turns a capital project into a software deployment.

UNDER AN AUDITED SECURITY SYSTEM

Industrial video and operational telemetry are sensitive data. The practice operates under ISO 27001, which is what allows the analytics to be attached to safety-critical operations rather than kept in a reporting layer. And a detection is not an outcome: an unsafe-behaviour alert only reduces incidents if there is a permit-to-work system to route it into, a behaviour-based safety programme to address it through, and a certified supervisor to act on it. The centre holds all three.

28 · STRATEGIC ROLE AND COMPETITIVE POSITION

The Egyptian energy and industrial perimeter

Direct partnership channels into the national energy holdings, and the integrated position no single-discipline competitor holds.

EGYPTIAN GOVERNMENTAL PARTNERS

Body	What it is
EGPC	Egyptian General Petroleum Corporation
EGAS	Egyptian Natural Gas Holding Company
ECHEM	Egyptian Petrochemicals Holding Company
GANOPE	Ganoub El Wadi Petroleum Holding Company

WHAT THE GOVERNMENTAL CHANNEL MEANS

EGPC and EGAS are the holding companies through which the Egyptian state organises petroleum and natural gas. An approved training capability for both, held by the operating company, is the credential that places the centre inside the national energy sector rather than adjacent to it, and it is one of the foundations on which the 2026 institutional accreditation set out in Part Six was granted.

THE COMPOUND EFFECT

The Bursa centre’s industrial deployment capability finds, in the Egyptian project-execution depth across oil, gas and heavy industry, the natural channel for AGS module roll-out in Egypt and the wider MENA market. In the other direction, the environmental assessment, monitoring and decarbonisation capability held in New Cairo connects directly into the Group’s carbon accounting and verification work.

THE COMPETITIVE POSITION IN THE MENA MARKET

Provider type	Typical scope	Gap
RRSC – YHE Centre	HSSEQ + AI monitoring + training + decarbonisation, in-house	Integrated, single hub
HSE consultancies	Audits & training only	No AI / decarbonisation
ISO certification bodies	Certification only	No delivery / training
Engineering EPCs	Project engineering	No HSSEQ culture / ESG
ESG advisories	Reporting & strategy	No industrial execution

ONE CHAIN OF ACCOUNTABILITY

Chain step	What the centre does	What the client receives
1 · Baseline	Gap analysis against ISO and sector standards	A documented statement of where the operation stands
2 · System	Management-system, PTW and BBS design	An implementable framework, not a policy document
3 · Mobilisation	On-site integration with the operating organisation	The system running on the client’s own site and shifts
4 · Competence	EGPC / EGAS-approved certification of the workforce	A crew certified to operate what has been built
5 · Evidence	AI monitoring, predictive analytics and KPI dashboards	Continuous proof the system is working, in field data

The real competitive position: the integration of HSSEQ, AI monitoring, EGPC / EGAS-approved training and decarbonisation under one co-branded identity, backed by a 15,000-professional track record, is a position no single-discipline competitor in the MENA market holds. That integration is the centre’s strategic asset.

4
NATIONAL ENERGY HOLDINGS
ENGAGED

7
SERVICE ECOSYSTEMS

5
STEPS IN ONE CHAIN OF
ACCOUNTABILITY

15K+
PROFESSIONALS CERTIFIED

29 · CLIENTS, TRACK RECORD & DELIVERY

From the floor to the field

A live portfolio of major industrial and energy clients served from New Cairo: the proof behind the headline figures.

The centre’s credibility rests on work that has left the training floor and reached major operators. Across its track record, the practice has trained more than 15,000 professionals, delivered over 900 services and executed more than 70 major projects. The documented client base spans leading energy and industrial names, including Shell, ExxonMobil, BP, Total, EGPC, EGAS, Coca-Cola, Fairmont, Ezz Steel and Uber, across the oil and gas, manufacturing, FMCG and services sectors.

Everything is inspectable. The track record, the client references and the credentials are open to review under a non-disclosure agreement. The New Cairo centre is open for a visit: every claim in this part can be physically verified. Over a multi-year track record the centre has sustained a delivery rhythm of certified training and HSSEQ mandates for the national energy sector and major industrial operators. It is that record, and not a statement of intent, that made the institutional recognitions described in Part Six possible.

DELIVERY MATURITY ROADMAP

YEAR	MILESTONE	STATUS
2024	Centre established & co-branded in New Cairo	Done
2025	Credentials stack & AI-monitoring capability scaled	Done
2026	Institutional accreditations in Egypt obtained	Done
2026	MENA-region decarbonisation & AGS mandates	In progress
2027	First sovereign-scale Group deployment	Target
2029+	Regional rollout · integrated energy-transition hub	Target

IN SUMMARY: WHAT NEW CAIRO IS

WHAT	THE FIGURE	THE EVIDENCE
The structure	500+ m² two-branch hub	Operating centre, 1st Settlement, New Cairo
The people	45 consultants & engineers, 8 disciplines	Deliver-audit-train in-house
The platform	HSSEQ · AI · decarbonisation	Live integrated practice
The proof	15K+ trained · 900+ services · 70+ projects	EGPC / EGAS-approved track record
The credentials	ISO 9001 · 14001 · 45001 · 27001	ATEX · IECEx · UL · FM · IADC
The standing	2026 institutional accreditations	Recorded in full in Part Six

THE DOCUMENTED CLIENT BASE, BY SECTOR

SECTOR	CLIENTS SERVED	TYPICAL MANDATE
International oil & gas	Shell · ExxonMobil · BP · Total	HSSEQ systems, Control of Work, contractor-safety culture, training
Egyptian national energy	EGPC · EGAS	Approved technical and safety certification of the national workforce
Manufacturing & steel	Ezz Steel	Industrial HSSEQ, equipment-safety training, audit and gap analysis
FMCG	Coca-Cola	Integrated ISO frameworks, behaviour-based safety programmes
Hospitality & services	Fairmont · Uber	OH&S systems, workforce competence programmes



CERTIFIED-CREW PROGRAMMES ON CLIENT SITES



INSTRUCTOR-LED SESSIONS AT THE CENTRE

PART SIX

Institutional recognition

The Arab Republic of Egypt, 2026

During 2026 the Group's engineering centre in Cairo obtained a formal institutional standing in Egypt: registration within the system of companies cooperating with the activities of the National Organization for Military Production, a strategic research partnership with The British University in Egypt, and the official commercial support of the Egyptian diplomatic mission in Washington D.C.



MINISTRY OF MILITARY PRODUCTION, ARAB REPUBLIC OF EGYPT



IN THIS PART

30 A new institutional standing in Egypt

32 The scope the accreditation opens, and the university partnership

31 The registration card, read in full

33 The Embassy recommendation, and the people behind the platform

2026/163

REGISTRATION NUMBER

17.06.2026

EFFECTIVE FROM

CR 100544

COMMERCIAL REGISTER

BUE

UNIVERSITY PARTNERSHIP

30 · WHAT CHANGED IN 2026

A new institutional standing in Egypt

Three recognitions, obtained within a single year, that move the Cairo centre from a credentialled private practice to an institutionally recognised national platform.

Everything set out in Part Five of this dossier, the facility, the 45 professionals, the ISO stack, the 15,000 trained and the 900 services delivered, describes a strong private engineering and assurance practice. What happened during 2026 is different in kind: the practice acquired a formal standing with Egyptian public institutions.

That distinction matters commercially. A private credential says that an organisation meets an international standard. An institutional registration says that a national authority has examined the organisation and admitted it to a defined system. The second is what opens doors that certificates alone do not.

First: the official partnership and accreditation of the engineering centre in Cairo with the Egyptian Ministry of Military Production, through registration in the system of companies cooperating with the activities of the National Organization for Military Production, recorded on a registration card issued by the Authority's Security Sector for the year 2026.

Second: a strategic partnership with The British University in Egypt, covering joint research initiatives, technology transfer, engineering development and educational excellence across several strategic sectors.

Third: the official support of the Embassy of the Arab Republic of Egypt in Washington D.C., through its Office of Economic and Commercial Representation, in the form of a recommendation addressed to the Export Council for Chemical Industries and Fertilizers.

What the institution is. The Ministry of Military Production of the Arab Republic of Egypt oversees the National Organization for Military Production, one of Egypt's principal industrial groupings. Its companies and units operate across heavy engineering, metals, electro-mechanical manufacturing, chemicals and infrastructure, and they procure engineering, maintenance, consultancy and training services from a controlled register of cooperating companies.

STATED PRECISELY

The registration is within the system of companies cooperating with the activities of the National Organization for Military Production, under the Ministry of Military Production of the Arab Republic of Egypt. The registered activity is recorded on the card as maintenance, consultancy, training and general supplies. This dossier reports the registration exactly as the card records it, and claims nothing beyond it.

WHY IT WAS POSSIBLE

Institutional admission of this kind follows a delivery record, not a business plan. The 15,000 professionals trained, the EGPC and EGAS approvals and the four-standard ISO stack described in Part Five are the substance the registration rests on.

3

2026/163 1

1

INSTITUTIONAL
RECOGNITIONS
IN 2026

SYSTEM REGISTRATION
NUMBER

UNIVERSITY
RESEARCH
PARTNERSHIP

DIPLOMATIC
RECOMMENDATION

What the registration does. Admission to that register is what the 2026 card records. It is the document a company submits among its papers when applying to participate in the activities of the Authority's companies and affiliated units: the evidence, in the Authority's own words, of registration in the system of cooperation with its activities. It is a qualification credential for participation, and it is renewed annually. The registration was accompanied by the establishment of a cooperation framework with the leadership of the General Authority for Military Production.

31 · THE DOCUMENT ITSELF

The registration card, read in full

Every recorded field of the 2026 registration card issued by the Security Sector of the National Organization for Military Production.



THE 2026 REGISTRATION CARD ORIGINAL DOCUMENT

FIELD ON THE CARD	RECORDED ENTRY
Issuing ministry	Ministry of Military Production
Issuing authority	National Organization for Military Production
Issuing sector	Authority Security Sector
Document type	Registration card in the system of companies cooperating with the activities of the National Organization for Military Production, year 2026
Company name	Yellow Helmet Egypt
Owner / Chairman	Yahia Zakaria Aly Moustafa
Responsible manager	Yahia Zakaria Aly Moustafa
Company representatives	Hazem Mohamed Kamal Fayad · Alaa Mahmoud Abdel Rahman
Company address	Group 10009, Hay El Zohour, 1st Settlement, New Cairo
Registered activity	Maintenance · consultancy · training · general supplies
Commercial register no.	100544 · issued 01.01.2017 · expiry 31.12.2026
System registration no.	2026 / 163 · first-time registration · year 2026
Effective / valid	From 17.06.2026 · until 31.12.2026
Approved and signed by	Ahmed Zakaria Tawfik, Head of the Security Sector

Fields as recorded on the original Arabic-language card, rendered here in English. The card carries the seal of the Authority and the seal of the Ministry of Military Production.

WHAT THE CARD STATES ABOUT ITS OWN PURPOSE

The card records that it is presented among the documents when applying to take part in the activities of the Authority's companies and affiliated units, as evidence of registration in the system of cooperation with the activities of the National Organization for Military Production. It is a qualification credential for participation, renewed annually.

FOR THE GROUP

It means the Cairo engineering centre is admitted, under its own Egyptian corporate identity and with its own commercial register, to a national industrial procurement system, for the categories the card records: maintenance, consultancy, training and general supplies.

32 · THE SCOPE THE RECOGNITION ADDRESSES

What the accreditation opens

The engineering and technology domains the Group brings to the cooperation framework established in Cairo: each already operating at one of the four centres profiled in this dossier.

DOMAIN	WHAT THE GROUP BRINGS	WHERE THE CAPABILITY COMES FROM
Advanced Geothermal Systems (AGS)	The RePG low-temperature ORC platform and the 1 MW AGS pilot: electricity from heat streams from about 55°C, including geothermal reinjection water and industrial waste heat	Bursa · Part Two
Artificial intelligence & cyber	AI-driven monitoring, predictive analytics, digital twins and integrated KPI dashboards, delivered under an ISO 27001 information-security management system	New Cairo · Part Five
Data centres	Engineering for data-centre facilities, including the recovery of server-cooling heat, which falls inside the 55-70°C envelope of the ORC platform	Bursa & Brindisi
Technology centre research	A research capability spanning the Montegranaro R&D centre, a 1,600 m² technology research laboratory in Brindisi, a patented energy-conversion portfolio and partnerships with universities and national research centres	Montegranaro, Brindisi & Bursa
Sustainable development	Decarbonisation, ESG implementation, carbon assessment, energy efficiency and climate-transition compliance, with EGPC- and EGAS-approved workforce training	New Cairo · Part Five

Why these five, and why Egypt. The five domains are not a wish list; they map onto capability the Group already holds and can demonstrate. Advanced Geothermal Systems is a machine on a test bench in Bursa with two units already running in the field. AI monitoring is a live service delivered from New Cairo under an audited information-security system. Data centres and technology research sit on the engineering and laboratory capacity in Brindisi and Montegranaro. Sustainable development is the Cairo centre’s core practice. None of the five is a proposal.

Egypt is the natural place for that combination to land: a large industrial economy with a national energy sector, an established heavy-engineering base and a stated decarbonisation agenda, at the junction of Africa, the Middle East and Europe, which is precisely the geography the Group’s centres already cover.

THE GEOTHERMAL ARGUMENT FOR EGYPT

The commercial significance of a 55°C operating floor is that it removes the requirement for volcanic geology. Heat at 55–80°C exists at sub-kilometre depths across very large areas, and hot water is co-produced in quantity by the oil and gas industry. In a country with a mature hydrocarbon sector, that turns an existing waste stream into a distributed generation resource.

RECOGNITION TWO: THE BRITISH UNIVERSITY IN EGYPT PARTNERSHIP

During 2026 the Group established a strategic partnership with The British University in Egypt, one of the country’s principal international universities, with particular reference to its Faculty of Energy and Environmental Engineering. The partnership was developed with Professor Attia M. Attia, Dean of the Faculty, whose commitment to strengthening cooperation between academia, scientific research and industrial innovation is acknowledged by the Group as central to the agreement.

The collaboration covers joint research initiatives (applied research in energy and environmental engineering, with particular reference to low-temperature geothermal conversion and industrial decarbonisation), technology transfer (structured transfer of engineering methods and energy-conversion technology into the Egyptian academic and industrial environment), engineering development, and educational excellence (curriculum contribution, applied projects and exposure of engineering students to operating industrial technology).

RESEARCH ALREADY IN THE GROUP

The university partnership in Egypt joins an existing research footprint: the Montegranaro centre holds the Group’s own independent laboratory mandate, the Brindisi centre works in strategic partnership with the Università del Salento, Dyrecta Lab and CETMA, and the Bursa centre operates inside the TÜBİTAK, Teknokent and Horizon Europe programme system. The Group’s research relationships now span four countries. A university partnership gives the Group a national scientific counterpart, a pipeline of Egyptian engineering graduates familiar with its technology, and independent academic validation of technical claims, which, in institutional and sovereign engagements, is worth more than any amount of vendor literature.

33 · RECOGNITION THREE, AND THE PEOPLE BEHIND THE PLATFORM

Support of the Embassy in Washington D.C.

An official commercial recommendation issued through the Office of Economic and Commercial Representation, and named responsibility on both sides of the partnership.

The third element of the 2026 institutional standing came from the diplomatic side: an official recommendation issued by Commercial Minister Plenipotentiary Yehia Al-Wathiq Billah and addressed to the Export Council for Chemical Industries and Fertilizers. It represents an institutional recognition of the capabilities of the R. Rockefeller S.C. Engineering Center in Cairo, and supports the promotion of the Group’s advanced engineering, HSSEQ, geothermal AGS, artificial-intelligence and sustainability offering across the Egyptian industrial sector.

Why an export council. Egypt’s export councils are the sectoral bodies that coordinate the country’s industrial export effort and act as the interface between exporters, government and international markets. A recommendation addressed to the Export Council for Chemical Industries and Fertilizers places the Group’s engineering and decarbonisation capability directly in front of the Egyptian chemical and fertiliser industry: one of the most energy-intensive and emission-intensive sectors in the country, and therefore one of the largest addressable markets for waste-heat recovery, HSSEQ systems and carbon management.

THE THREE ROUTES, TOGETHER

Taken separately, each recognition is a credential. Taken together they form a route to market: the Authority registration provides access to the national industrial procurement system, the university partnership provides scientific validation, and the embassy recommendation provides the commercial introduction to an entire industrial sector.

Issuing mission	Embassy of the Arab Republic of Egypt, Washington D.C.
Issuing office	Office of Economic and Commercial Representation
Issued by	Commercial Minister Plenipotentiary Yehia Al-Wathiq Billah
Addressed to	Export Council for Chemical Industries and Fertilizers
Subject	Recognition of the capabilities of the R. Rockefeller S.C. Engineering Center, Cairo
Domains promoted	Advanced engineering · HSSEQ · geothermal AGS · artificial intelligence · sustainability
Target sector	Egyptian industrial sector, chemical industries and fertilisers

WHO CARRIED THE 2026 RECOGNITIONS

NAME	OFFICE AND ROLE IN THE RECOGNITIONS
Dr. Yahia Zakaria Aly Moustafa	General Director of the Cairo centre; founder and Managing Director of Yellow Helmet Egypt; named chairman and responsible manager on the 2026 registration
Valentino Loforese	Executive Vice President, The Rob Rockefeller Standard Carbon LLC: Group representation in the Egyptian mission
Lassaad Kedimi	President of R. Rockefeller S.C. North Africa: strategic leadership across the Group’s institutional relationships in North Africa
Professor Attia M. Attia	Dean of the Faculty of Energy and Environmental Engineering, The British University in Egypt: academic counterpart to the research partnership
Ahmed Zakaria Tawfik	Head of the Security Sector of the General Authority for Military Production: issued and approved the 2026 registration card

THE CONSEQUENCE: BEFORE AND AFTER 2026

	BEFORE 2026	AFTER THE 2026 RECOGNITIONS
Standing	A credentialed private engineering and HSSEQ practice, certified to international standards	A practice additionally registered within a national industrial system and supported by an academic and a diplomatic institution
Market access	Direct commercial relationships with industrial and energy operators	Access to the procurement system of a national industrial authority, plus a sectoral introduction through an export council
Scientific standing	Internal methodology and international professional accreditations	A university research partnership with a named faculty and dean
Scope addressed	HSSEQ, training, audit, decarbonisation advisory	The same, plus AGS geothermal, AI and cyber, data centres and technology-centre research inside the accredited framework
Renewal	ISO certification cycles and professional accreditation renewals	The same, plus the annual renewal cycle of the system registration

33 · THE HONEST READING

What the 2026 recognitions change, and what they do not

A registration card is a small document. What it represents is not.

What it does not change. It does not change the ownership structure. Yellow Helmet Egypt remains the operating company and the holder of the local credentials portfolio, including the 2026 registration, which is issued in its name. The Rob Rockefeller Standard Carbon LLC remains the institutional and commercial vehicle. Neither party has transferred anything to the other.

It also does not change the technical substance. The centre delivers the same audits, the same permit-to-work systems, the same behaviour-based safety programmes and the same EGPC- and EGAS-approved training it delivered before. What has changed is who has formally examined it and admitted it.

THE HONEST SUMMARY

A national authority has examined an Egyptian company, its commercial register, its responsible management and its declared activity, and admitted it to a controlled system for the year 2026. Combined with a university research partnership and a diplomatic commercial recommendation, it establishes the Cairo engineering centre as an institutionally recognised platform in the Arab Republic of Egypt.

WHAT AN INSTITUTIONAL COUNTERPARTY WILL WANT TO SEE

QUESTION	WHERE THE ANSWER IS IN THIS DOSSIER
Is the Egyptian company properly constituted?	Commercial Registration CR 100544, Tax Identification 535910339, and GAFI and chamber registrations, all recorded in Part Five and repeated on the 2026 card
Is the registration current?	The card is effective from 17 June 2026 and valid to 31 December 2026, and is renewed annually
Who is answerable for it?	Dr. Yahia Zakaria Aly Moustafa is named on the card as both owner and responsible manager; two company representatives are named alongside him
What activity is registered?	Maintenance, consultancy, training and general supplies: the same four categories that appear on the commercial register
Who issued and approved it?	The Security Sector of the National Organization for Military Production, signed by its Head, Ahmed Zakaria Tawfik
What technical substance stands behind it?	The 45-professional platform, the four-standard ISO stack, the EGPC and EGAS training approvals and the 15,000-professional training record set out in Part Five

“ Egypt represents one of the most important gateways connecting Africa, the Middle East and Europe, which is why the Cairo engineering centre is a key component of the Group’s long-term international strategy rather than a regional office.

IN SUMMARY, WHAT PART SIX ESTABLISHES

The registration: admission to the register of companies cooperating with the activities of the National Organization for Military Production (card 2026/163, first-time registration, effective 17.06.2026, valid to 31.12.2026). The registered activity: maintenance, consultancy, training and general supplies. The academic partnership: joint research, technology transfer, engineering development and educational excellence with The British University in Egypt. The diplomatic support: official recommendation of the Commercial Minister Plenipotentiary to the Export Council for Chemical Industries and Fertilizers. The domains addressed: Advanced Geothermal Systems, artificial intelligence and cyber, data centres, technology-centre research and sustainable development, each already operating at one of the four engineering centres profiled in this dossier.

PART SEVEN

The Group, consolidated

Four centres. One vision. Global impact.

The four engineering centres read as one organisation: what they share, where they differ, what they add up to, and how the commercial structure carries them across five continents.

R·R·S·C

AGS ENGINEERING · BURSA · BRINDISI · EGYPT

N°48 AGS ENGINEERING · BURSA · BRINDISI · EGYPT

48

Engineering. *The engineering team.*

The engineering force behind the AGS Geothermal vertical, the Italian engineering coordination centre in Brindisi and the new Egyptian Engineering Center in Cairo — operating across Türkiye, Italy and Egypt under unified technical governance.



Hüseyin Karayağız
GENERAL MANAGER OF THE THE ROB ROCKEFELLER S.C. TECHNOLOGY ENGINEERING CENTER TÜRKİYE

Hüseyin Karayağız
CEO RePG · CHAIRMAN OF THE BOARD

CED and Chairman of RePG Enerji Sistemleri San. ve Tic. A.Ş., Bursa. Strategic Partnership with RRSC — World Bank & UN exclusivity. World record 55°C minimum-temperature AGS module operational at Hayat Kimya.



Hasan Ayartürk
GENERAL MANAGER & CHIEF OF STAFF ENGINEER OF THE THE ROB ROCKEFELLER S.C. TECHNOLOGY ENGINEERING CENTER TÜRKİYE

Hasan Ayartürk
GM & CHIEF OF STAFF ENGINEER · BURSA

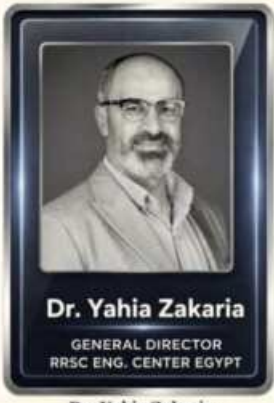
General Manager and Chief of Staff Engineers of The Rob Rockefeller S.C. Technology Engineering Center Türkiye. Majority Shareholder of RePG. Coordinates the engineering team behind the world-record AGS module deployed at TRL-9 at Hayat Kimya.



Sandro Nasta
EXECUTIVE MANAGER ENGINEERING AREA AND DIRECTOR OF THE TECHNOLOGY RESEARCH LABORATORY

Sandro Nasta
EM ENGINEERING · DIRECTOR TRL BRINDISI

Executive Manager Engineering Area and Director of the Technology Research Laboratory. Directs the Brindisi strategic coordination centre. Coordinates with Bursa on AGS engineering, with Nepal on AI architecture, with Milan on SIA validated technology stack.



Dr. Yahia Zakaria
GENERAL DIRECTOR RRSC ENG. CENTER EGYPT

Dr. Yahia Zakaria
GENERAL DIRECTOR · RRSC ENG. CENTER EGYPT

General Director of the RRSC Engineering Center Egypt — Cairo. MSc. Safety, Health & Environment (Univ. of Greenwich, UK). UK IOSH · BOHS · NEBOSH-IGC · IRCA Lead Auditor (ISO 45001/9001/14001/22000). 20+ years across BG Group, Shell, ADES.

ENGINEERING: THE ENGINEERING TEAM

UNIFIED TECHNICAL GOVERNANCE ACROSS THE CENTRES · ORIGINAL DOCUMENTATION

IN THIS PART

- 36 The four centres compared

37 The combined capability matrix

38 The Group by the numbers

39 Consolidated roadmap 2024–2030

40 The global network and the leadership

41 Governance, contacts and verification

4	24	5	169
ENGINEERING CENTRES	ACTIVE CENTRES	CONTINENTS	ENGINEERS & SPECIALISTS

36 · THE FOUR CENTRES COMPARED

One table, four centres

Facility, people, discipline, proof and role: side by side.

	BURSA · TÜRKİYE	MONTEGRANARO · ITALY	BRINDISI · ITALY	NEW CAIRO · EGYPT
Operating partner	RePG Energy	Think Green Technologies S.A.	Skem@ Srl	Yellow Helmet Egypt
Established as centre	Factory & R&D centre, Nilüfer	Strategic-independent R&D centre, Montegranaro (FM)	HQ + Technology Research Lab	Two-branch hub, 1st Settlement
Role in the Group	Technology & IP engine	Research & development	Plant-engineering house	Assurance & transition hub
Premises	4,000 m²	1,400 m²	3,000 m² + 1,600 m² lab + 265 m²	500+ m² over two branches
People	85 engineers	14 resident engineers	25+ specialists	30+ consultants + 15 engineers
Core discipline	Low-temperature ORC & AGS	Green energy, AI & sustainability, technological research	Electrical, instrumentation & automation; polyolefins	HSSEQ, decarbonisation, AI monitoring
Signature capability	Design-build-test of a certified machine	First principle to instrumented, reproducible demonstrator	Basic design and FEED for licensed process technology	Deliver-audit-train with in-house certification
Management systems	ISO 9001 · 14001	ISO 9001 · 14001 (partner, ILC)	ISO 9001 · 45001	ISO 9001 · 14001 · 45001 · 27001
Product certification	CE / INTERTURK on RE-75kW	Partner process patents (TEAS)	Referenced	ATEX · IECEx · UL · FM · IADC
Public approvals / programmes	TÜBİTAK · Horizon Europe	Within the partnership portfolio	Research partners: Salento, Dyrecta, CETMA	EGPC · EGAS · 2026 national registration
Delivered proof	2 live ORC units, TRL 9	HG4HOME instrumented demonstrator, 15 kW PoC	40+ countries, 15+ years	15K+ trained · 900+ services · 70+ projects
Flagship programme	1 MW AGS pilot	TEAS families & HG4HOME engineering	Engie 5 MW green hydrogen	MENA decarbonisation & AGS mandates
Named leadership	Hasan Ayartürk · Hüseyin Karayağız	Andrea Miano	Sandro Nasta	Dr. Yahia Zakaria Aly Moustafa

WHAT THEY SHARE

All four are operating facilities with a floor, a payroll and an audited management discipline. All four hold or operate under certifications issued by external bodies and renewed on a cycle. All four are open to inspection. And in all four the local engineering partner retains ownership of what it has built.

WHERE THEY DIFFER

Montegranaro researches and demonstrates; Bursa manufactures; Brindisi designs; New Cairo assures and trains. Montegranaro's proof is an instrumented demonstrator and its acquisition files; Bursa's is a machine on a bench and a fleet in the field; Brindisi's is a fifteen-year project record for named licensors; New Cairo's is a training and audit record plus a national institutional standing.

37 · THE COMBINED CAPABILITY MATRIX

What the Group can take prime responsibility for

Read across the row: which centre carries which phase, and where the Group holds depth rather than coordination.

CAPABILITY	BURSA	MONTEGRANARO	BRINDISI	NEW CAIRO	GROUP POSITION
Original research & instrumented demonstration	Support	Prime	Support	·	Independent laboratory mandate
Technology-entry assessment	Support	Prime	·	·	In-house
Energy-conversion R&D	Prime	Support	Support	·	Owned, patented
Machine manufacture & test	Prime	·	·	·	In-house
Product certification (CE)	Prime	·	·	·	Held
Feasibility & concept	Support	Support	Prime	Support	In-house
Basic design & FEED	·	·	Prime	·	Licensors-trusted
Detail engineering	·	·	Prime	·	In-house
Control & safety systems	Support	Support	Prime	Support	Designed and tested in-house
Procurement & construction support	·	·	Prime	Support	In-house
Commissioning & start-up	Prime	·	Prime	Support	In-house
Permit-to-work & site safety	·	·	Support	Prime	In-house
Workforce certification	·	·	·	Prime	EGPC / EGAS-approved
Audit & management systems	Support	·	Support	Prime	In-house
AI monitoring & digital twins	Support	Support	Support	Prime	In-house, ISO 27001
Carbon assessment & ESG	·	·	Support	Prime	In-house
Operations & maintenance	Support	·	Prime	Prime	In-house

"Prime" means the centre carries technical responsibility for the phase. "Support" means it contributes discipline expertise under another centre's lead. A dot means the measure does not describe what that centre does.

READING THE MATRIX

There is no row in which the Group depends on an external party for a critical phase of an energy project it originates. That is the practical meaning of the four-centre structure, and it is the reason the Group can present itself for prime engineering responsibility rather than for a sub-package. Where a row shows two Prime entries, the phase is split by scope: Bursa commissions the machine, Brindisi commissions the plant around it, New Cairo certifies the crew that will run it.

38 · THE GROUP BY THE NUMBERS

Consolidated figures across the four centres

Every figure below is drawn from the centre profiles in Parts Two to Five of this dossier.

~10,765

M² TOTAL ENGINEERING FLOOR

169

ENGINEERS & CONSULTANTS

22+

ENGINEERING DISCIPLINES

180+

GLOBAL PATENTS

MEASURE	BURSA	MONTEGRANARO	BRINDISI	NEW CAIRO	GROUP TOTAL
Engineering floor (m²)	4,000	1,400	3,000 + 1,600 + 265	500+	~10,765
Engineers & specialists	85	14	25+	45	169+
Engineering disciplines	8	Research team, 8 areas	6	8	22+ across the Group
Registered patents	32 (180+ portfolio)	Partner process IP (TEAS)	·	·	32 registered
Trademarks	22	·	·	·	22
ISO management systems	2	2 (partner, ILC)	2	4	10 systems held
Countries with delivered work	·	·	40+	Egypt & MENA	40+
Professionals trained	·	·	·	15,000+	15,000+
Services delivered	·	·	·	900+	900+
Major projects executed	·	·	See Part Four	70+	70+ recorded in Egypt
Live generating installations	2	Demonstrator on the bench	·	·	2 in the field
Cumulative field generation	>43,600 kWh recorded	·	·	·	>43,600 kWh

How to read these totals. The totals are additive where addition is meaningful and marked otherwise. Floor area adds. Headcount adds. Disciplines add, because the four centres genuinely cover different ones. Patents do not add across centres because they are held by one partner. Countries do not add because the same country appears in more than one record.

Where a cell shows a dot, the centre does not report that measure: not because the figure is zero, but because the measure does not describe what that centre does. Brindisi does not train workforces to a national approval; New Cairo does not hold patents on a turbine; Montegranaro does not deliver plants in forty countries.

THE FIGURE THAT MATTERS MOST

If a single number had to stand for the Group, it would be 169: the engineers, consultants and specialists on the four payrolls. Floor area can be leased and certificates can be bought; a multi-disciplinary technical staff of that size, held across four centres in three countries with named leadership in each, is what cannot be assembled quickly.

The staged path, across all four centres

Where each centre is in its own programme, and where the four converge.

YEAR	BURSA · TECHNOLOGY	MONTTEGRANARO · RESEARCH	BRINDISI · PLANT ENGINEERING	NEW CAIRO · ASSURANCE & TRANSITION	STATUS
2024	AGS R&D initiated	·	Engie 5 MW green hydrogen basic design	Centre established & co-branded	Done
2025	Component & integration testing	·	Green-projects office scaled	Credentials stack & AI monitoring scaled	Done
2026	1 MW AGS pilot · TRL 7 demonstration	Centre integrated into the Group network; HG4HOME demonstrator instrumented and measured	Transition portfolio expansion	Institutional accreditations obtained in Egypt	In progress
2027	First commercial AGS deployment	Purpose-built engine-generator programme for HG4HOME	Surface-plant engineering for AGS	First sovereign-scale Group deployment	Target
2028	Serial production scale-up	Programmes documented to manufacturable standard	Multi-site EPCM capability	Regional training and audit network	Target
2029+	Global rollout · TRL 9 at MW class	Multi-line research portfolio at reproducible-demonstrator stage	Integrated EPCM for Group programmes	Integrated energy-transition hub for MENA	Target

THE CONVERGENCE POINT

2027. The first commercial AGS deployment requires the centres simultaneously: a machine built and certified in Bursa, a surface plant engineered in Brindisi, and an operating and training mandate carried by New Cairo, with Montegranaro holding the research bench behind the next technology families.

THE DE-RISKING LOGIC

Nothing on this roadmap requires a technology that does not exist. The turbine is certified and running; the engineering house has delivered comparable plants; the assurance platform is approved and operating. What is being scaled is size, not principle.

THE HONEST CAVEAT

Every entry from 2027 onward is a target. They are stated here as targets and should be read as such. The entries marked Done are the ones that can be verified today, at the four addresses in this dossier.

“ What is being scaled is size, not principle. The machine is certified, the plant type has been engineered before, and the crews are already being trained.

From four centres to a global network

The engineering centres are the technology and delivery engine; the commercial structure carries them across five continents.

The division of roles is clean and it is the same everywhere. The four engineering centres research, build, engineer, certify and train, and they own what they have built. The Rob Rockefeller Standard Carbon LLC, Delaware, EIN 93-4657669, carries that capability into sovereign partnerships and international markets. The engineering centres are the fixed points the entire global structure rests on.

Why a network and not a headquarters. Energy and industrial engagements are won locally and delivered locally. A commercial presence establishes the relationship and holds the local regulatory and contractual knowledge; the four engineering centres supply the technical substance behind it. Neither works without the other.

One caution on reading a presence map. A commercial presence and an engineering centre are different things, and this dossier is careful not to conflate them. Twenty-four active centres across five continents is the commercial reach. Four of those, Montegranaro, Bursa, Brindisi and New Cairo, are operating engineering facilities with floors, payrolls, audited management systems and certificates, and those four are the subject of this document.

THE CITIES OF THE NETWORK

Dover (Delaware) · Milan · Fermo / Montegranaro · Sofia · Brindisi · Istanbul · Bursa · Dubai · Riyadh · Tunis · Tripoli · Cairo · Abidjan · Accra · Port Harcourt · Kinshasa · Brazzaville · Nairobi · Johannesburg · Lalitpur (Nepal) · New Delhi · Mumbai · Shanghai · Singapore

HOW THE NETWORK IS USED

FUNCTION	CARRIED BY	WHY IT SITS THERE
Technology development and manufacture	Bursa, Türkiye	A dense industrial corridor with the supply chain, the machining capacity and the engineering labour market a manufacturing R&D centre needs
Original research and demonstration	Montegranaro, Italy	A specialised precision-manufacturing district with the supply chain and workforce a prototype laboratory needs
Plant engineering and coordination	Brindisi, Italy	An Adriatic energy port at the crossing of the European, North-African and Middle-Eastern markets, with a polyolefin engineering nucleus already in place
Assurance, training and transition	New Cairo, Egypt	A large industrial economy with a national energy sector, a stated decarbonisation agenda and a gateway position between Africa, the Middle East and Europe
Corporate and institutional	Delaware and Milan	The legal seat and the European corporate office through which sovereign and investment engagements are carried
Commercial representation	The wider 24-centre network	Market access and client relationships across five continents



THE ENGINEERING LEADERSHIP: WHO ANSWERS FOR THE WORK

NAME	OFFICE	CENTRE	DISCIPLINE
Hüseyin Karayağız	CEO of RePG · Chairman of the Board · General Manager of the Bursa engineering centre	Bursa, Türkiye	Computer engineering
Hasan Ayartürk	Founder and General Manager of RePG Energy · Chief Engineer	Bursa, Türkiye	Mechanical engineering
Andrea Miano	General Director of the Montegranaro engineering centre	Montegranaro, Italy	Research direction & governance
Sandro Nasta	General Director of the Brindisi centre · Managing Director of Skem@ Srl · Director of the Technology Research Laboratory	Brindisi, Italy	Electrical, instrumentation & automation
Dr. Yahia Zakaria Aly Moustafa	General Director of the Egypt centre · Founder and Managing Director of Yellow Helmet Egypt	New Cairo, Egypt	HSE consultancy, auditing & sustainability
Lassaad Kedimi	President, R. Rockefeller S.C. North Africa	Regional · North Africa	Institutional & commercial leadership
Valentino Loforese	Executive Vice President, The Rob Rockefeller Standard Carbon LLC	Group	Corporate & institutional

41 · GOVERNANCE, OWNERSHIP & CONTACTS

Who owns what

The ownership model applied consistently across the four partnerships, and where to address enquiries.

CENTRE	OPERATING PARTNER: WHAT IT OWNS AND RETAINS	RRSC: WHAT IT HOLDS
Bursa, Türkiye	RePG Energy: technology developer and sole IP owner of the low-temperature ORC platform; retains manufacturing and engineering capability at Bursa	Exclusive global deployment and commercialisation rights through a strategic partnership
Montegranaro, Italy	Think Green Technologies S.A.: owner of the TEAS process and its intellectual property; the Centre owns the engineering, the rigs, the instrumentation and the documentation	The Group's own strategic-independent R&D centre, integrated in the international engineering network
Brindisi, Italy	Skem@ Srl: performs and owns the engineering capability; retains engineering and delivery at Brindisi	The commercial role for international deployments, sovereign partnerships and investment structures
New Cairo, Egypt	Yellow Helmet Egypt: operating company and holder of the local credentials portfolio, including the 2026 registration; retains independent activity	The global brand and the strategic-sector mandate through a co-branded strategic partnership

THE PRINCIPLE, STATED ONCE

In every one of the four partnerships the same rule applies: neither side transfers ownership of what it has built. The engineering partner keeps its intellectual property, its capability and its credentials. The Group provides the institutional and commercial vehicle. Where credentials are shared, as under Article 9 of the Egyptian partnership agreement, the licence is non-exclusive, royalty-free and for qualification purposes, and full ownership remains with the holder.

Corporate, USA	8 The Green, STE R, Dover, DE 19901 · 1309 Coffeen Ave, Ste 1200-C, Sheridan, WY 82801
Registered agent	Corporation Trust Center, 1209 Orange St, Wilmington, Delaware 19801
Corporate, Europe	Milan, Italy: Via Monte Napoleone 21
Centre, Montegranaro	Via Massimo d'Antona snc, 63812 Montegranaro (FM), Italy
Centre, Bursa	Alaaddinbey Mah., Nilüfer / Çalı, Bursa, Türkiye
Centre, Brindisi	Industrial zone, Brindisi, Puglia, Italy
Centre, New Cairo	Building 2, Group 10009, 10th Neighborhood, 1st Settlement, New Cairo, Egypt
Delaware LLC / EIN	Reg. No. 6714331 · EIN 93-4657669
Digital	www.therockefeller-sct.com · team@rockefeller-sct.com

WHERE TO ADDRESS AN ENQUIRY

IF THE SUBJECT IS...	ADDRESS IT TO	WHAT CAN BE MADE AVAILABLE
The ORC platform, the AGS pilot, patents or manufacturing	The Bursa engineering centre, through the Group	Certificates and test reports, IP schedules, bench and field data, a facility visit
Research programmes, TEAS engineering or the HG4HOME demonstrator	The Montegranaro engineering centre, through the Group	Test records and acquisition files, programme documentation, a facility visit
Plant engineering, FEED, detail design or control and safety systems	The Brindisi engineering centre, through the Group	Engineering reference volumes, the IT and document platform, a facility visit
HSSEQ, audit, workforce training, ESG or decarbonisation	The New Cairo engineering centre, through the Group	Credentials portfolio, client references, training records, a facility visit
Egyptian institutional and North African matters	The Group's North Africa presidency, with the Cairo centre	The 2026 registration, the university partnership, the commercial recommendation
Institutional, sovereign or investment matters	The Rob Rockefeller Standard Carbon LLC	Corporate documentation, partnership agreements, the consolidated dossier

41 · VERIFICATION

How to check everything in this dossier

Every category of claim made here, and the specific document, instrument or address against which it can be tested.

CLASS OF CLAIM	WHERE IT IS STATED	HOW TO VERIFY IT
Premises and floor area	Parts Two to Five	A site visit to Montegranaro, Nilüfer, Brindisi or New Cairo; lease and cadastral documentation available at each centre
Headcount and disciplines	The capability pages of each part	Meet the discipline leads; payroll and organisational charts are shown on request under a non-disclosure agreement
Research results	Part Three, HG4HOME and testing pages	The acquisition files, run records and instrument logs retained at Montegranaro; a demonstration on the bench
Product certification	Part Two, certifications section	The INTERTURK Attestation INT-26-124RES-01 and its four dated test reports, reproduced in this dossier and held in original at Bursa
Management systems	All four parts	The IQR certificates QMS-012487 and EMS-012487 for Bursa; the ISO 9001 and 45001 certificates for Brindisi; the ISO 9001 and 14001 systems under ILC Certification for the Montegranaro partnership; the four-standard ISO stack for New Cairo
Measured technical performance	Parts Two and Three	The bench test table, and the live one-minute telemetry from the Hayat Kimya and AFJET units: the AFJET dashboard is publicly accessible
Intellectual property	Parts Two and Three	The registered patent, trademark, design and utility-model schedules, and the partner process-patent filings, available for review under a non-disclosure agreement
Delivered project record	Part Four, project references	The Skem@ engineering reference volumes for Oil & Gas, Petrochemical and Power (2023), and client references on request
Training and audit record	Part Five, clients and track record	The training register, the EGPC and EGAS approvals, and client references
Egyptian institutional standing	Part Six	The 2026 registration card, reproduced in full; the university partnership; the commercial recommendation issued through the Egyptian Embassy in Washington D.C.
Corporate particulars	The opening and closing pages	Delaware LLC registration 6714331 and EIN 93-4657669, verifiable in the public record

WHAT IS NOT IN THIS DOSSIER

No forecast revenue, no valuation, no unverifiable market claim. Where a date lies in the future it is marked as a target. Where a figure comes from an instrument, the measuring conditions are stated. Where a photograph is reproduced, it is an original photograph of the facility, the equipment or the document it describes.

WHAT A VISIT LOOKS LIKE

Half a day at each centre. In Montegranaro the route ends at a running demonstrator and its acquisition file. In Bursa it ends at the test bench and the live telemetry screen. In Brindisi it ends in the Technology Research Lab with a control cabinet under functional test. In New Cairo it ends in a training room with a crew being certified.

“ Not a rendering, not a brochure, not a promise: four working engineering centres, four sets of certificates, and four addresses where all of it can be inspected.

In summary. A 4,000 m² engineering and R&D centre in Bursa run with RePG Energy; a 1,400 m² research and development centre at Montegranaro run with Think Green Technologies S.A.; a 3,000 m² headquarters with a 1,600 m² technology research laboratory in Brindisi run with Skem@ Srl; and a 500+ m² two-branch engineering and sustainability centre in New Cairo run with Yellow Helmet Egypt.

Together: 169 engineers, consultants and specialists across more than twenty disciplines, an independent research laboratory with an instrumented demonstrator, a patented and CE-certified energy technology with a live operating fleet, a fifteen-year delivered engineering record across forty countries, an EGPC- and EGAS-approved training platform, and, since 2026, a formal institutional standing in the Arab Republic of Egypt. Everything here can be inspected.

The invitation. The four centres are open. Everything printed in this dossier is meant to be checked on site, against the certificates, the instruments and the people who did the work.

THE FOUR ADDRESSES

Bursa, Türkiye	Alaaddinbey Mah., Nilüfer / Çalı, Bursa, with RePG Energy
Montegranaro, Italy	Via Massimo d’Antona snc, 63812 Montegranaro (FM), with Think Green Technologies S.A.
Brindisi, Italy	Industrial zone, Brindisi, Puglia, with Skem@ Srl
New Cairo, Egypt	Building 2, Group 10009, 10th Neighborhood, 1st Settlement, with Yellow Helmet Egypt

COLOPHON

The Engineering Centres of the Group, Institutional Master Dossier. Edition August 2026, version 3.0. Prepared for institutional and governmental review by The Rob Rockefeller Standard Carbon LLC, a Delaware limited liability company, in collaboration with Think Green Technologies S.A. (Montegranaro, Italy), RePG Energy (Bursa, Türkiye), Skem@ Srl (Brindisi, Italy) and Yellow Helmet Egypt (New Cairo, Arab Republic of Egypt). All photographs reproduced in this dossier are original photographs of the facilities, equipment, teams and documents they describe. All certificates, registrations and test reports referenced are held by the centre that carries them and are available for review under a non-disclosure agreement. Figures dated beyond the current year are stated targets and are marked as such throughout.

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4

169

22+

ENGINEERING CENTRES

ENGINEERS & SPECIALISTS

DISCIPLINES

24

5

ACTIVE CENTRES

CONTINENTS



THE ROB ROCKEFELLER STANDARD CARBON LLC

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📄 EIN: 93-4657669 | Delaware LLC Reg. No. 6714331 **USA**

USA | ITALY | BULGARIA | TURKEY | UAE | SAUDI ARABIA | TUNISIA | CONGO | EGYPT | LIBYA | IVORY COAST | NIGERIA
SOUTH AFRICA | INDIA | CHINA | SINGAPORE | NEPAL | HONG KONG



AI SOFTWARE
DEVELOPMENT



GEOTHERMAL
ENERGY



SUSTAINABILITY



CYBER
SECURITY



GLOBAL
STRATEGY

